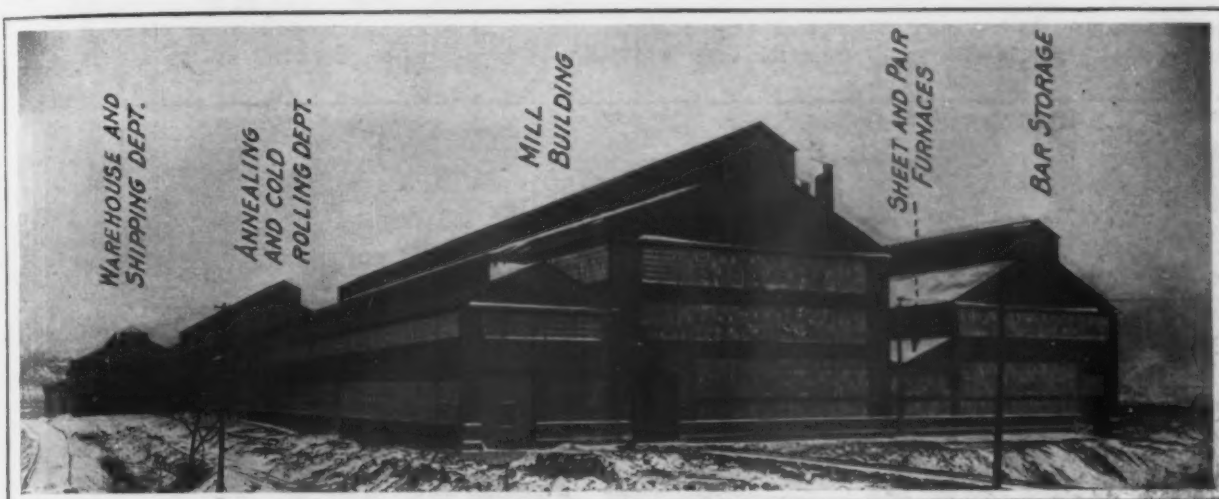


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Sheet Mill of the Otis Steel Company

Features Include Staggered Arrangement of Furnaces—Powdered Coal Used—Plant Notable for Its Applications of Modern Equipment and Design

THE new sheet mill plant of the Otis Steel Co., Cleveland, built as an extension of its Riverside Works, has a number of distinctive features. Among the most prominent is the arrangement for the convenient handling of material, and consequently, the economy in operation. The bar storage department is located at the side of the furnace and mill departments directly back of the furnaces, which reduces the amount of handling of raw material. Sheet bars in storage under roof are taken to the bar shear as required and on leaving the shear the crane places them back of the pair furnaces. Rolled sheets go from the hot mills to the squaring shears on the opposite side of the mill building, and from there to the shear bay back of the shears, where ample storeroom is provided, so they can be left here in storage until they are wanted in the cold rolling and annealing department. The plant is entirely electrically operated.

The excellent lighting of the plant is another important feature. The buildings are arranged and the roof designed so that more daylight is admitted than in mill buildings of the more common design. Although there are four adjoining buildings, making virtually one building 231 ft. wide, considerable wall surface is provided for continuous window sections along the connecting sides of the buildings. The daylight thus admitted supplements that which enters through the continuous windows in the outer side walls.

The plant is a flexible one designed for making all kinds of sheets and in all finishes, its product including full finished sheets for the automobile trade. With this new sheet mill as an addition to its other plants, the company is equipped to make a line of mill products

extending from heavy plates down to sheets in the lightest gages.

The new plant is an eight hot mill plant with the mills arranged in two trains with separate drives and each finishing mill has its own roughing stand. Powdered coal is used for fuel both in the sheet and pair furnaces and in the annealing furnaces. With the plant arrangement back travel of material is avoided and the amount of handling required in the movement of sheets up to the time they reach the shipping platform appears to have been reduced to a minimum. From the squaring shears sheets are carried in a straight line to the adjoining cold rolling and annealing building, which is virtually an extension of the shear and mill buildings. On one side of the annealing building is the pickling department close to the mills. The annealing furnaces extend along the building beyond the pickling department and are a considerable distance from the hot mills. Connected to the annealing department on the opposite side is the warehouse. The shipping platform as well as the bar storage department are under cover.

The main mill building is 90 ft. wide. On one side is the bar storage building, 75 ft. wide, and connecting the two is a leanto 26 ft. wide in which are located the sheet and pair furnaces. Adjoining the mill building on the opposite side is the shear department, 40 ft. wide. These connected buildings are 456 ft. in length.

Extending from the lower end of the shear and mill building, to which it is connected, is the annealing and cold rolling department, that occupies a building 80 x 500 ft. On one side of this is a leanto 31 ft. 6 in. x 340 ft., in which the annealing furnaces are located,

and attached on the same side is the pickling department, 50 x 120 ft. The warehouse adjoining the annealing department on the opposite side is 75 x 380 ft.

Sheet bars are brought into the bar storage department on a depressed railroad track that extends the length of this building on the outer side. The building is served by a 10-ton traveling crane. Near the center is a United Engineering & Foundry Co. bar shear driven by a 25-hp. motor. Sheet bars are delivered to an inclined skid table 36 ft. long, from which they are moved to an adjoining roller table that serves the bar shear. Back of the shears is a cradle in which the sheared bars are piled, a man with a hook arranging these in four stacks as they pass from the shear to

with the finishing and roughing stands alternating. Each train is composed of 38 to 56-in. mills, all rolls being 30 in. in diameter. This gives a capacity for rolling sheets up to 48 in. in width. Two of the roughing mills have top rolls balanced with electrically operated screw downs operated by 50-hp. motors. These stands are used for rolling sheets in the heavier gages. All mills were supplied by the Mackintosh-Hemphill Co., Pittsburgh, except the rolls, which were made by the Otis company.

Each mill train is driven by an Allis-Chalmers 1000-hp. induction motor operating at 250 r.p.m. and located in the center of the mill train. The speed of the rolls is reduced to 32 r.p.m. through a Falk her-



The Charging End of One of the Double Continuous Pair Furnaces and the Electrically Operated Charging Device. Back of the column at the left is one of the sheet furnaces and the fuel supply line that connects to this furnace. Above is one of the powdered coal bins

the cradle. The cradle has a capacity of approximately 250 bars. When the cradle is full a chain or rope is swung around the packs and the crane places them in front of the furnaces. This cradle is a temporary arrangement, as it is being replaced with three piler cradles and three cars on which the cradles will be pushed when loaded so that there will be no interruption of the shear. A sheet bar pickling tank will also be installed in the storage building.

Instead of having combination furnaces, the plant has separate sheet and pair furnaces. There are four double continuous pair furnaces and eight sheet furnaces. The furnaces are placed in a staggered position, the sheet furnaces being close to the mill trains and the pair furnaces set several feet back, between the sheet furnaces and close to the bar yard. The furnaces are of a standard type supplied by the Geo. J. Hagan Co., Pittsburgh. The pair furnaces are charged with electrically operated pushers supplied by the Hagan company.

The hot mills consist of eight finishing and eight roughing stands, eight stands in each duplicate train,

ringbone gear with a reduction of approximately 8 to 1. Connected to the reduction gear shaft are two 29,000-lb. flywheels.

An interesting feature of the motor installation is the adoption of two types of motor control. One motor has the Westinghouse notch back system of control, and the other, the Allis-Chalmers liquid slip regulator. This gives an opportunity for comparing the two types of control under exactly similar operating conditions. In this connection, it might be mentioned that in the old plant the company is using the General Electric notch back relay control, so that it has the three types of motor control at its Riverside Works. The controls are inclosed in separate brick houses located between the sheet furnaces, where they are protected from dirt and rattle. The electric current is supplied from the power house at the old plant, being carried to the new plant in underground conduits. The steam for the picklers and doublers and the compressed air supply also come from this power house.

To provide for the comfort of the men, water cooled standings of the Baird type are located beneath the



The Furnaces Are Located in a Leanto Adjoining the Mill Building. This picture shows the staggered position of the furnaces, the double pair furnace at the right being several feet further back than the sheet furnaces. The two roughing mill stands at the left adjoining one of the drives, not shown, have electrically operated screw-downs. This picture shows some of the steam operated doublers

floor between the furnaces and hot mill stands. Between the mills and furnaces are steam operated doublers, one for each pair of mills. These were supplied by the United Engineering & Foundry Co., Pittsburgh.

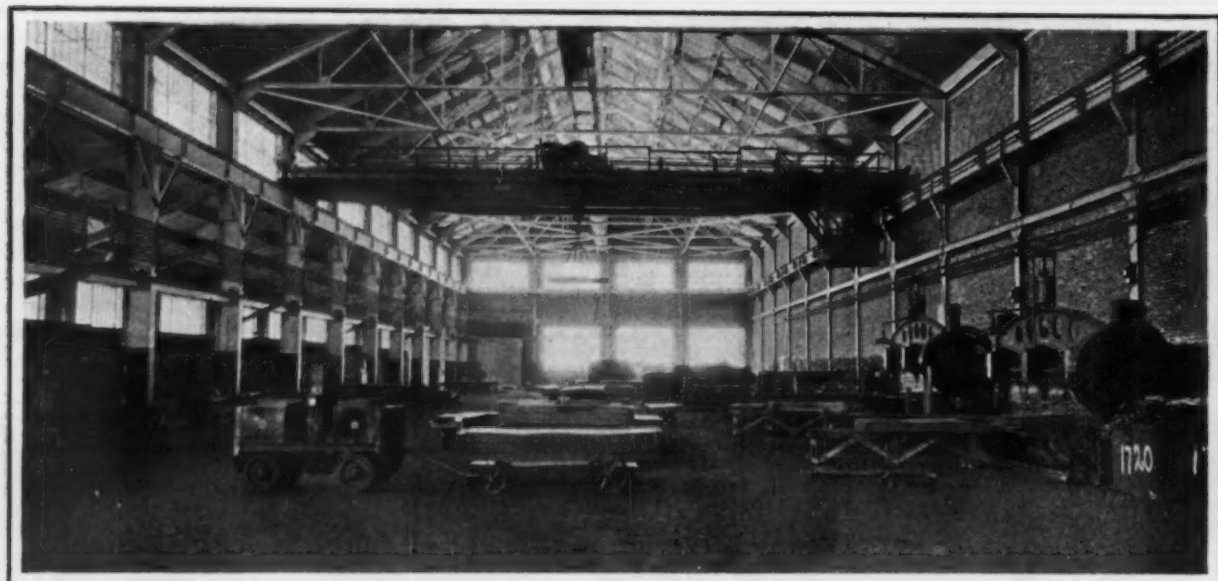
Four 150-in. squaring shears, one for two mills, are located back of the finishing mills on the opposite side of the mill building. Sheets pass from the back of the shears into the adjoining shear building. With the shears in the mill building, the entire 40-ft. bay of the

shear building is left free for the handling of stock. The shears are driven by 15-hp. motors. They were supplied by the Erie Foundry Co., Erie, Pa. The mill building is served by a 40-ton crane and the shear building by a 10-ton crane.

Scrap is bundled in a hydraulic baler supplied by the Galland-Henning Mfg. Co., Milwaukee, located at the lower end of the shear building. The bundles of compressed scrap are handled with the overhead crane. A drag type of conveyor will be installed for carrying



View from the End of Cold Rolling and Annealing Department Looking into the Shear Building at the Right and the Mill Building at the Left. The squaring shears are located along the columns in the mill building. A wide shear building permits the storage of sheets in this bay until needed in the annealing and cold rolling department. The shear department crane runway extends into the annealing department under the crane in that department, for convenience in handling stock



The Inclosed Shipping Platform of the Warehouse Is Shown at the Left

the bales of scrap from the baler to railroad cars outside of the building. Sheets pass down the shear department in one direction and the scrap goes in the opposite direction. This routing arrangement is found to be very convenient.

A 15-ton Fairbanks scale is located in the shear building and a 10-ton scale in the bar storage building. All bars are weighed after shearing and before being charged into the pair furnaces and the sheets are weighed after leaving the squaring shears. This gives a check on the amount of scrap.

The annealing and cold rolling building, as previously mentioned, connects to the shear and mill buildings and is practically a continuation of the latter buildings. This department is served by a 40-ton crane for handling annealing boxes and a 10-ton crane for handling sheets. The crane runway of the shear building extends 40 ft. into the annealing department, providing an overlapping of crane runways, the runway in the annealing department being 15 ft. higher than that in the shearing department. With this crane arrangement, trucking is avoided and hand labor is reduced to a minimum in delivering sheets from the shear department to the annealing department.

There are five stands of cold rolls in one train set at right angles to the length of the building. These have 28-in. rolls. Two of the cold rolls and their drive were supplied by the Fawcus Machine Co., Pittsburgh, and the others were made by the Otis company. They are driven by a 200-hp. motor.

There are six double annealing Hagan furnaces of single box length located in the leanto adjoining the annealing floor. Annealing furnace temperatures are taken with Brown pyrometers, temperature recording charts being located in the mill office. There are also temperature indicators at all the furnaces. The pyrometers are expected to prove particularly useful in connection with the annealing furnaces when special heats are required.

The annealing boxes are in two sizes, 160 in. long, 46 in. wide and 48 in. high and 132 x 42 x 66 in. The common method of rolling the boxes into the furnaces on cast iron balls is followed.

The pickling department, located in a building at the side of the annealing department, is equipped with two Mesta four-arm steam operated automatic pickling machines. A special coke fired drying machine designed and built by the Otis company is provided for drying high finished sheets after pickling. These sheets pass between rubber rolls on to a motor operated conveyor that carries them through the drying chamber

about 18 ft. in length. The conveyor is operated by a variable speed motor. This machine is brick inclosed. At present only one 54-in. galvanizing pot has been installed.

The warehouse and shipping department is a hot water heated brick building with wood block floor. This is conveniently located, sheets being taken into the warehouse through two doors that connect with the adjoining cold rolling and annealing department. Sheets are hauled to the warehouse on roller bearing trucks built by the Ohio Galvanizing & Equipment Co. and by Lakewood Engineering tractors as well as with hand trucks. The warehouse is served by a 10-ton crane. The shipping platform is located in a leanto 16 ft. 6 in. wide that extends the length of the warehouse on the side opposite the annealing department. A depressed railroad track extends the length of the platform and all loading is done under cover. Sheets in the warehouse are kept on trucks as far as possible in order to obviate the labor of re-handling as well as to avoid the scratching of finished sheets in re-handling.

The warehouse equipment includes two Erie Foundry Co. 156-in. squaring and other shears, two Walker & Elliot and a Hillis & Jones roller leveler, an oiling machine made by the Otis company, a Streine corrugating machine, a Globe Foundry & Machine Co. patent leveling and stretching machine, a painting machine, a Standard and a Fairbanks bundling scale and a Fairbanks beam registering shipping scale.

The powdered coal plant occupying a building conveniently located in respect to the heating and annealing furnaces was installed by the Quigley Furnace Specialties Co., now the Hardinge Mill Co., New York. Coal is dumped from cars into a track hopper and is crushed by a 18 x 18-in. Jeffery single roll crusher. Then it is elevated to a 55-ton bin, from which it is discharged into a Ruggles-Cole dryer. From the dryer it is again elevated to a storage bin over a Raymond five-roller impact pulverizer, which delivers it to a 3-ton blow tank on the floor of the building. This tank is located on the platform of a hollow dial scale. The scale shows when the amount of fuel required has been delivered to any service bin.

The sheet and pair furnaces are served by four 3-ton steel bins. one bin for four furnaces, and the annealing furnaces by three 7-ton bins, one for two furnaces. The bins are located in the rear of the furnaces, being set back at a sufficient distance to avoid danger of the fuel catching on fire in the bins. The powdered coal is carried from the blow tank to the service bins in a 4-in. overhead conduit under air pressure supplied

by an Ingersoll-Rand motor-driven air compressor with a capacity of 265 cu. ft. per minute. From the bottom of the bins the fuel passes through a screw feeder and drops into a siphon, from which it is delivered to the furnace burners by means of a primary air system, one fan serving the sheet and pair furnaces and another the annealing furnaces.

The supply lines from the bins to the furnaces are 2½ in. in diameter for the shorter lines and 3 in. in diameter where longer lines are required. At the furnaces the fuel is mixed with air from a secondary air system that supplies air for combustion purposes. Four fans are provided for supplying air for the primary and secondary systems, one for each system in connection with the sheet and pair furnaces and the other two supplying similar service for the annealing furnace air systems. The primary system fan for the sheet and pair furnaces is driven by a 7½-hp. motor and the primary system fan for the annealing furnaces is driven by a 10-hp. motor. Both the fans for the secondary system are driven by 25-hp. motors. The fans were supplied by the Clarage Fan Co. A cyclone dust collector is located above each supply bin, these being above the roof of the sheet and pair furnace leanto and beneath the roof in the annealing furnace room.

All construction work on the plant outside of the erection of the buildings and furnaces, including even the wiring and piping, was done by the Otis company. The buildings were designed by the company and erected by the American Bridge Co. With the exception of a brick wall extending 6 ft. from the ground, the sidewalls of the mill buildings are of corrugated steel and continuous factory ribbed glass windows in Lupton and Fenestra steel sash with continuous ventilating sections. The roof is of corrugated steel. The warehouse roof is of 1¼-in. sheathing covered with four-ply asbestos roofing. The building and mill foundations are set on Raymond concrete piles. All the crane equipment was supplied by the Cleveland Crane

& Engineering Co. with the exception of one of the 40-ton cranes, which was built by the Alliance Machine Co. The electric motors outside of the two mill motors were furnished by the General Electric Co.

Gear guards, safety ladders and other safety devices are provided for the safety of the men. Shower baths, lavatories, lockers and other conveniences for the men will be provided in a separate building that is to be erected.

Canada's Pig Iron and Steel Output in 1921

The pig iron and steel output of Canada in 1921 was as follows, according to data issued by the Dominion Bureau of Statistics:

Pig Iron:	Gross Tons	
Basic	461,578	
Foundry	97,304	
Malleable	35,084	
Castings	388	
Total	594,354	
Ferroalloys	22,493	
Steel Ingots and Castings:	Ingots	Castings
Open-hearth, basic	641,882	6,531
Open-hearth, acid	239	256
Bessemer	94	1,638
Electric	2,860	13,984
Total	645,075	22,409

The 1920 production of pig iron was 974,000 tons, and that of steel ingots and castings 1,109,000 tons.

Of the 1921 pig iron output 610 tons was made in electric furnaces, and out of a total of 20 furnaces, 18 were idle at the end of December.

The absorption of the Haskell & Barker Car Co. by the Pullman Co., Chicago, has been effected and Edward F. Carry, president of the former Haskell & Barker Car Co., has been elected president of the Pullman Co. The new Pullman organization also includes as directors D. A. Crawford and C. A. Liddle, respectively treasurer and vice-president of the Haskell & Barker Car Co.

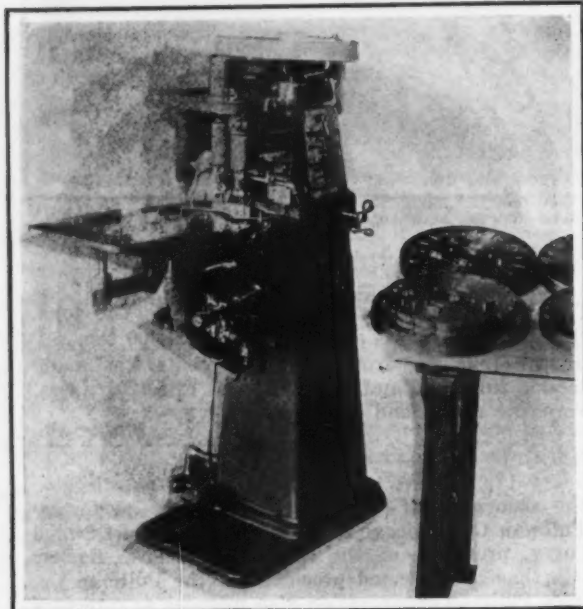


The Annealing Furnaces Are Located in a Leanto Building Adjoining the Annealing Department. The picture shows the fuel storage bins, dust collectors and the primary and secondary air supply lines

Multiple Tapping Machine with Dial Feed

A multiple-spindle tapping machine equipped with dial feed and eliminating the use of clutches for reversing the rotation of the spindles has been brought out by the Anderson Die Machine Co., Bridgeport. It is intended for large quantity production of small brass and steel pieces, such as enter into the construction of electrical appliances. It can be used also to advantage, it is said, in tapping nuts and other small pieces.

This machine is intended to overcome the limitations of designs using some form of clutch for reversing the direction of spindle rotation, which designs usually have but a single spindle and employ a geared head in cases where more than one hole is to be tapped. It is



The Spindles Are Driven in Alternate Directions by Means of a Gear-Tooth Segment and Train of Gears

also intended to provide greater production capacity than afforded by machines having dial feed which necessitate rotating the dial by hand and leaving one hand free for inserting the work. The production of the latter type, it is pointed out, is limited to the speed of the operator in rotating and advancing, as well as feeding, and the fact that the clutches must be reversed by hand or foot.

The machine is shown in the accompanying illustration and is similar in operation to the dial-fed punch press. The spindles are driven in alternate directions by means of a gear-tooth segment and train of gears, the segment being controlled by a crank disk at the upper end of the vertical shaft extending through the central part of the main frame. Cams for indexing the dial and locking it in its proper position are secured to the vertical shaft. A ratchet arrangement controls the dial and has regularly 18 teeth, leaving 18 openings in the dial. The dial is of relatively thin material and has openings to fit the particular pieces to be operated upon. Pieces with one, two or three holes can be tapped at one passing, and the construction of the chuck spindles permits of three taps of entirely different leads being used simultaneously.

The tap spindles on each side of the fixed central spindle are adjustable to take care of any combination or location of the three holes. The dials are made to suit the primary or central spindle, which is not adjustable. The dial is then located or rotated to bring the one hole in register with the fixed spindle; then the two auxiliary spindles are adjusted to suit the location of either of the other two holes.

As to production, the machine for the general tap sizes used in electrical work (Nos. 4 to 10), the tap is run at a speed of 56 strokes per min., which is readily fed into the dial. This would give, it is claimed, an hourly production of 3300 pieces with either 1, 2 or 3 holes. On pieces where only 1 hole is tapped, it is said

to be possible to double up the output by doubling the number of slots in the dial, and so adjust one of the auxiliary spindles as to tap the staggered opening in the dial. This, it is claimed, would result in about 112 pieces per min. on single-hole tapping.

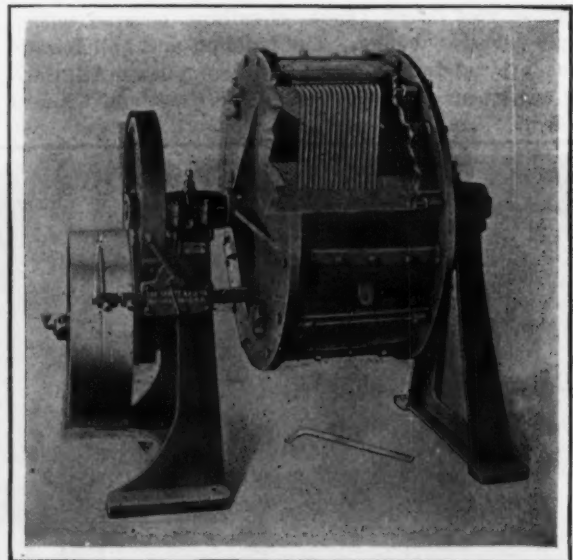
A cam and slide which will work in conjunction with the dial to enable round pieces to be tapped without difficulty can be supplied. It is understood, of course, that with the particular form of drive employed in this machine it is possible to time the various movements accurately and without danger of the time being upset for any reason. Spindles running at relatively high speed are mounted in ball bearings.

Work-Holding Burnishing Barrel

A burnishing barrel in which the work is held stationary to the inside of the barrel body and is carried by it through a mixture of balls, soap and water has been developed recently by the Abbott Ball Co., Hartford. The object of this design is to permit work to be finished without the danger of one piece coming in contact with another and bruising or scratching it.

The barrel body is eight-sided, each side having a hinged hand-hole cover. The opening into the barrel body is beveled to provide a tight fit for an inside cover plate which sets into this opening, and is held in place by the hinged cover coming against two flat springs mounted on the back of the inside plate. The springs are used as handles when the plate is lifted out. The hinged cover has packing around it so that when it is clamped the openings are watertight.

The work is held by fixtures which are fastened to the face of the cover plate. As the machines are primarily for finishing large quantities of one or more classes of work, two or three sets of cover plates and work-holding fixtures are used to advantage. Thus



The Work Is Mounted on a Fixture and Held Stationary

while unloading and loading one set of fixtures the machine would be operating on a set in the barrel. When the work is finished, instead of dumping the balls from the barrel, it is merely necessary to open the top cover, lift out the fixture, replace it with another, close the hinged cover, bring the next hole up to the top and repeat the operation until all of the finished work is out of the barrel and the new batch in.

On work to be plated three sets of fixtures can be used. In this case, when the work comes out of the barrel it is left on the fixtures, put through the plating operation and brought back to the burnishing barrel for its final finishing. This is done with one loading of the fixture.

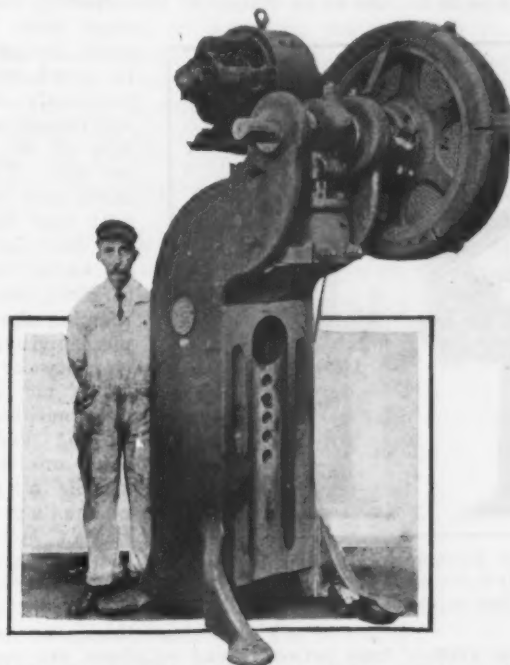
The barrel may be cleaned without removing the balls by means of a special strainer cover placed over one of the openings. The barrel is opened, filled with water and the machine operated until the rinsing is complete.

Motor Driven Horning Press

A special horning press, equipped with direct motor drive and guarded wheel, as shown, has been brought out by the Ferracute Machine Co., Bridgeton, N. J.

The motor rests on a shelf that is bolted to a tablet cast in the frame and a rawhide pinion on the motor meshes with teeth cut in the flywheel. The direct drive thus effected dispenses with belt connection and economizes space. The wheel is not only entirely surrounded with a guard, but has also a wire mesh cast between the flywheel spokes, a feature intended to provide a thorough safeguard against accidents when the wheel is in motion.

The horn hole in the frame is 7½ in. in diameter and 43 in. from the floor, a rather unusual height for



Horning Press Equipped with Direct Motor Drive and Special Flywheel Safeguard

special work. The horizontal distance from center of the ram to the planed front of the frame is 11 in. The guides in the vertical front are planed to enable an adjustable bed to be affixed at various heights, square with the bottom of ram, the connections being made by means of large bolts and dowels. Parallelism between the bed and ram surfaces is thereby assured.

The wide variation in the distance between the bed and the ram, together with the facilities for horning and the unusual height of the press, are intended to provide for a greater latitude of work than is customary. The press shown is the fourth in a series of five sizes.

Crucibles from Domestic Clays and Graphites

Early in 1918 the Columbus (Ohio) station of the Bureau of Mines began an investigation of American bond clays and graphites to determine their crucible-making properties in comparison with foreign clays and graphites. Work on the bond clays, which was completed in the fiscal year 1920, showed that better crucibles could be made from domestic clay than from imported clays. The testing of graphites on which some preliminary work had been done was then undertaken by the Bureau of Mines. Samples of seven graphites, from Ceylon, Madagascar, Canada, New York, Alaska, Texas, and Montana, of 400 pounds each were obtained. Ten crucibles of No. 70 size were made from each graphite for brass melting purposes, and six crucibles of No. 60 size for testing under steel melting practice. These crucibles were made in the plant of the Vesuvius Crucible Co., Swissvale, Pa. The brass melting crucibles were shipped to the plant of the Detroit Lubricator Co., Detroit, where they were tested under regular brass melting practice.

Arrangements were made for testing the steel melting crucibles in the plant of the Simonds Mfg. Co.,

Lockport, N. Y., but when the crucibles were ready for shipment word was received that the pit furnaces of the Simonds steel plant were not in operation, and as they have not been in operation since that time, it has been impossible to test the steel melting crucibles.

In the brass melting tests, the average number of heats of the crucibles shown by the different graphites are as follows: Alabama, 13.09; Madagascar, 12.44; Ceylon, 10.50; New York, 9.60; Texas, 6.80; Montana, 6.11; Canadian, 5.80. These results indicate that good brass-melting crucibles can be made from Alabama graphite, and agree with the findings of previous work.

Automatic Stoker Companies Merged

A merger has been effected of the Combustion Engineering Corporation of New York, the Underfeed Stoker Co., London, England, Lupulco Systems, Inc., International Pulverized Fuel Corporation and the Combustion Engineering Building, Inc. The new company has been incorporated as the International Combustion Engineering Corporation. One third of the capital stock of the Societe Anonyme des Foyers Automatiques of France has been acquired. Automatic stokers and accessories are the principal articles manufactured by the companies entering the consolidation. Officers of the new company are George E. Learnard, president; W. R. Wood, J. Scott Skelly, Joseph V. Santry, Charles J. Peabody, vice-president; George H. Hansel, secretary and treasurer, and Benjamin Harrison, assistant secretary.

Growth in Chicago Industries, 1914-19

According to census figures given out at Washington, the number of factories in Chicago increased only 4.2 per cent between 1914 and 1919, but the capital, wages and value of output were more than doubled:

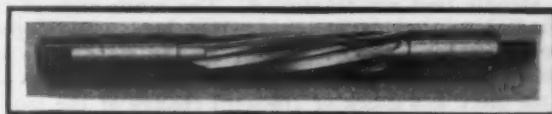
	1919	1914
Number of establishments.....	10,538	10,115
Persons engaged in manufacturing.....	502,303	387,319
Proprietors and firm members..	8,182	8,184
Salaried employees.....	90,064	65,425
Wage-earners, average number..	404,057	313,710
Primary horsepower.....	326,420	681,114
Capital.....	\$2,076,194,000	\$1,196,069,000
Salaries.....	188,448,000	90,295,000
Wages.....	508,276,000	213,737,000
Materials.....	2,380,025,000	901,933,000
*Value added by manufacturers.	1,278,715,000	581,565,000

*Value of products less cost of materials.

Helical-Flute Expansion Hand Reamer

A helical-flute expansion hand reamer in sizes up to 2½ in. in diameter has been placed on the market by the Millersburg Reamer & Tool Co., Inc., Millersburg, Pa.

The helical flutes permit the production of clean-cut



Helical Flute Expansion Hand Reamer

holes, accurate as to size, which is due to the smooth, shearing action of blades of this design. The blades may be expanded to compensate for wear and re-sharpening, thus maintaining the original size of the tool. It is claimed that this tool gives 30 to 40 per cent more production than a similar tool of the straight-fluted type.

The Department of Commerce announces that moving pictures are to be used extensively to promote foreign trade. Some remarkable industrial pictures have been taken by the United States Bureau of Mines and other agencies, particularly of the manufacture of certain steel products and of mining operations. Some that have been exhibited at technical conventions have been good substitutes for plant visitation. The plan contemplates that the cost of the films be borne by the company whose product is shown.

Automatic Machine for Production Drilling and Reaming

A special machine for drilling, reaming, facing, countersinking and other operations on comparatively small pieces produced in quantity, has been brought out by H. Edsall Barr, Erie, Pa. Rapid production and simplicity of construction are the features emphasized by the maker.

From the accompanying illustration it may be seen that there are two spindles on the face of the column, each spindle rotating in a square guide block. The two spindles rotate in a right hand direction and are driven by noiseless gears at the upper end which mesh into a central drive gear. At the rear of the machine there is a cam shaft, operating at 20 r.p.m., which carries three duplicate sets of cams, one set each side of the center line. Each large middle cam operates a lever arm through a steel roller which is kept against the cam by a heavy coil spring. The lever arm is fulcrumed on the column and its end toward the spindle is cut as a gear segment; this meshing with a rack on the rear side of the square spindle guide block.

Thus the rise of the middle cams move the respective spindle automatically downward, while the spindles are rotated by the upper shaft driving a short middle shaft through the bevel gears shown. The cams for each side of the machine are set so that the spindles, etc., operate alternately. The middle cams have a uniform rise, giving a steady feed to the spindle; and a quick drop, giving rapid return of the spindle after completion of the cutting stroke. The cams may be changed to give less than maximum spindle travel, as in drilling or reaming thinner material. The cams may also be replaced by others of different contour to allow a dwell at the end of the feed stroke as in facing or countersinking.

The cam shaft is driven from the cone pulley through gearing which provides the proper reduction of speed and by the use of the cone pulley various rates of spindle feed are obtainable. The lower ends of the spindles are regularly equipped to hold a high-speed tool by a set screw, inasmuch as the machine is intended for continuous or at least extensive runs on the same piece and quick or frequent change of the tool is not required. However, the spindle can be provided with a taper socket if required.

A rotatable fixture head having inserted steel pockets to receive the work to be machined is located beneath the spindles, as shown. There are four pockets in each head, and the head rotates $\frac{1}{4}$ turn after each rise of the respective spindle. The head is rotated by an internal cam on the rear shaft, which pulls the side rod toward the rear, the side rod rotating the head by a lever loosely mounted on the head spindle and provided with a steel dog which engages slots in the fixed collar of the head spindle. The backward or reverse movement of the side rod is then without effect on the fixture head, this motion simply placing the dog in position to rotate the head another quarter of a turn at the proper time. Outside cams on the rear shaft operate a side arm which in turn moves a tapered pin into engagement with holes in a fixed collar on the head spindle. This occurs after the head has been rotated to a new quarter and is designed to lock the head in

accurate position as to alinement with the spindle holding the tool.

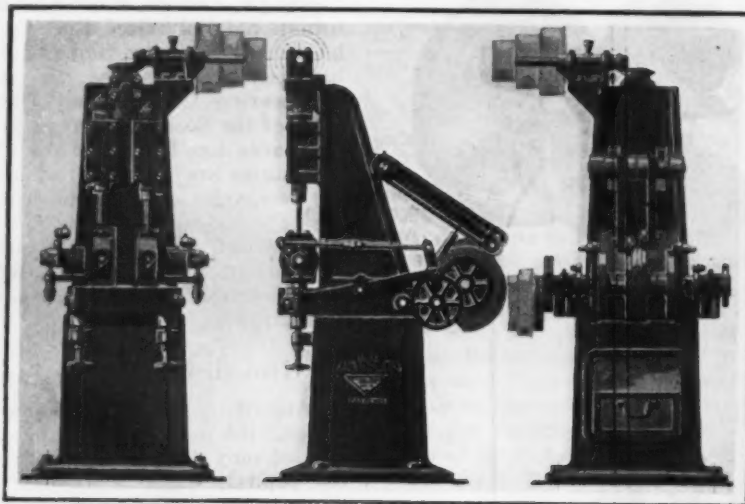
The operator sits facing the spindles and from a sheet-metal container fastened across the machine he picks the pieces to be worked on, placing them in the pocket facing him, first in the left hand and then in the right hand head. All the motions of the machine continue without attention from the operator and the finished pieces fall into chutes and from thence into metal tote boxes, located at the rear and off the floor, as shown.

The cone pulley driving the spindle allows variation of rotative tool speed independently of the feed. The fixture heads are movable up or down by the hand wheels beneath the turned column of the fixture head.

The machine is designed to take drills or reamers up to $\frac{5}{8}$ in. As an indication of the capacity, pieces of

gray iron $\frac{3}{4}$ in. thick, having a $\frac{1}{2}$ -in. cored hole, not previously drilled, are reamed at the rate of 40 pieces per min. The machine may be used with both spindles on one operation or, as in the case of drilling and reaming the same piece, and where the quantity of work does not require two machines, the drilling may be done on the left spindle and the reaming on the right spindle of the same machine. In working on steel parts of some thickness, requiring

greater time between head rotations, one operator can feed two machines. Suitable safeguards are provided for gears and other moving parts.



Front, Side and Rear View of Automatic Machine for Drilling, Reaming and Other Operations on Small Pieces. It is intended for quantity production and for continuous runs on same piece

Coal and Coke in 1921

Bituminous coal produced from April 1 to Dec. 31, 1921, according to the United States Geological Survey, amounted to 306,552,000 net tons, an average of 1,331,000 tons per day, compared with 419,996,000 tons in the same period of 1920, an average of 1,821,000 tons per day. For the calendar year 1921, production was 408,065,000 net tons, compared with 556,563,000 tons in 1920, with 458,063,000 tons in 1919, and 579,386,000 tons in 1918. The average, from 1913 to 1920 inclusive, was 499,011,000 tons. Production up to Jan. 14 (the coal year begins April 1) of the past five years shows this year to be one of great depression, thus:

Years of Activity		Years of Depression	
1917-18.....	434,686,000	1919-20.....	375,517,000
1918-19.....	465,110,000	1921-22.....	322,270,000
1920-21.....	440,695,000		

By-product coke, in December, reached a figure about equivalent to the average of 1917, but beehive coke showed less than 20 per cent of the 1917 average.

Output of By-Product and Beehive Coke in the United States (Net Tons)

	By-product Coke	Beehive Coke	Total Coal Consumed
1917 monthly average	1,870,000	2,764,000	4,634,000
1918 monthly average	2,166,000	2,540,000	4,706,000
1919 monthly average	2,095,000	1,587,000	3,682,000
1920 monthly average	2,569,000	1,709,000	4,278,000
September, 1921....	1,423,000	289,000	1,712,000
October, 1921.....	1,734,000	416,000	2,150,000
November, 1921....	1,766,000	477,000	2,243,000
December, 1921....	1,860,000	514,000	2,374,000

A blow-out in the bottom of the furnace of the Detroit Iron & Steel Co., Detroit, Jan. 14, caused the death of two men and the injury of a third. The operation of the furnace was resumed in about 48 hours.

Cold Rolled Strip Steel Calculations

Formulas for Determining Pounds Output and Piece-Work Rates in the Manufacture of Cold Rolled Strip Steel

BY S. T. HILLIARD

FOR determining quickly and accurately the output of rolling mills and of apparatus having a constant speed take-up in the manufacture of cold rolled strip steel, and to figure piece-work rates per 100-lb. to be applied to the work, the following formulas have been computed. Time study is eliminated, except for that required to find the amount of time during which the machine is idle, or the time lost between passes. As all other factors are known, output and rates can be solved by a mathematical equation. Long observation and rough approximation are thus eliminated.

The weight of steel is taken as 490 lb. per cu. ft. In case of high carbon steel, 489 lb. per cu. ft. would need to be used. A slide rule should be employed in the computation. The legend is as follows:

- A—base rate in dollars
- B—number of take-ups, or mills
- C—number coils rolled
- D—total weight rolled
- E—per cent efficiency
- F—ft. per hr. of stock
- L—weight of coil in lb.
- M—minutes between passes
- N—number of passes
- P—lb. per hr. at 100 per cent efficiency
- R—radius of take-ups in inches
- R₁—outside radius of coil
- S—r.p.m. of take-up
- T—thickness in inches
- W—width of stock in inches

The output of a mill in lb. per hr., at 100 per cent efficiency, can be determined by the following:

$$P = \frac{WTF}{144} \times 490 = \frac{WTF}{0.294} = 3.4 \times WTF$$

The length in feet of a coil of weight L is:

$$\text{Feet} = \frac{0.294 L}{WT}$$

An equivalent thickness for any number of passes can be found by the following:

$$T = \frac{1 \text{st pass}}{1 + \frac{1 \text{st pass}}{2 \text{nd pass}} + \frac{1 \text{st pass}}{3 \text{rd pass}} \text{ etc.}}$$

In the denominator, 1st pass, 2nd pass, etc., are taken as whole numbers. Thus, if four passes are 0.010—0.008—0.006—0.004 in.,

$$T = \frac{0.010}{1 + \frac{10}{8} + \frac{10}{6} + \frac{10}{4}} = 0.00156 \text{ in.}$$

Problem: $F = 6000$ ft. $W = 1\frac{1}{2}$ in. Passes, the same as above. Required, the output per hour at 100 per cent efficiency.

$$P = \frac{WTF}{0.294} = \frac{1\frac{1}{2} \times 0.00156 \times 6000}{0.294} = 47.7 \text{ lb.}$$

The following, and perhaps more simple, method of getting the same result, calls for the use of a table. The first method can be readily remembered.

Thick- ness, In.	Running Ft. per Lb. 1 In. Wide	Thick- ness, In.	Running Ft. per Lb. 1 In. Wide	Thick- ness, In.	Running Ft. per Lb. 1 In. Wide
0.004	73.5	0.020	14.7	0.036	8.17
0.005	58.8	0.021	14.0	0.037	7.95
0.006	49.0	0.022	13.4	0.038	7.74
0.007	42.0	0.023	12.8	0.039	7.54
0.008	36.75	0.024	12.25	0.040	7.35
0.009	32.7	0.025	11.75	0.041	7.17
0.010	29.4	0.026	11.3	0.042	7.0
0.011	26.7	0.027	10.9	0.043	6.85
0.012	24.5	0.028	10.5	0.044	6.68
0.013	22.6	0.029	10.1	0.045	6.53
0.014	21.0	0.030	9.8	0.046	6.4
0.015	19.6	0.031	9.5	0.047	6.26
0.016	18.4	0.032	9.2	0.048	6.13
0.017	17.3	0.033	8.9	0.049	6.0
0.018	16.3	0.034	8.65	0.050	5.88
0.019	15.5	0.035	8.4		

Formula for ft. per lb. of stock 1 in. wide = $\frac{0.294}{T}$

Thus, flat wire = 0.018 in. thick,

$$\frac{0.294}{0.018} = 16.33 \text{ ft. per lb.}$$

Method of Use

Divide the ft. per hr. of the mills by the sum of the ft. per lb. of the passes, and multiply by the width in inches. The result is the lb. per hr. output of the mill or mills at 100 per cent efficiency.

Illustration: Use the same problem as above.

$$29.4 + 36.75 + 49 + 73.5 = 188.65$$

$$\frac{6000}{188.65} \times 1\frac{1}{2} = 47.7 \text{ lb. per hr., as before.}$$

To find the per cent efficiency, E, when the time lost between passes is known, use the following formula:

$$E = \frac{60}{\frac{N \times P \times M \times C}{D \times B} + 60}$$

$$\text{Rate per 100 lb. in dollars} = \frac{A}{\frac{E \times P}{100}} = \frac{100 A}{E \times P}$$

$$= \frac{100 A}{60 P} = \frac{5 A}{3 P} \left(\frac{NMPC}{DB} + 60 \right)$$

$$= \frac{5 A}{3} \left(\frac{NMC}{DB} + \frac{60}{P} \right)$$

$$\text{But } P = \frac{WTF}{0.294}$$

$$\text{Therefore Rate} = A \left(\frac{5 NMC}{3 DB} + \frac{29.4}{WTF} \right)$$

The formula in this form would be used to determine the rate after the work is done, as it contains the factors $\frac{C}{D}$ which give the exact average weight of coils.

This would probably entail too much clerical work, so that a weight of coil would be assumed as in the case of a table of rates. Then L is substituted for $\frac{D}{C}$ and $N=1$, whence

$$\text{Rate} = A \left(\frac{5 M}{3 LB} + \frac{29.4}{WTF} \right)$$

Illustration: Assume $M=2$ min., $L=70$ lb., $B=2$ mills, $F=12,000$ ft. (2 mills), $W=1\frac{1}{2}$ in., $T=0.020$ in., Base Rate = \$0.60 per hr.

$$\text{Rate} = \$0.60 \left(\frac{5 \times 2}{3 \times 70 \times 2} + \frac{29.4}{1\frac{1}{2} \times 0.020 \times 12,000} \right)$$

$$= \$0.0633 \text{ per 100 lb.}$$

It is seen that all but W and T become constants, so that the amount of computation is really small. A table of rates can thus be quickly and accurately made up.

Formulae for lb. per hour of a constant-speed take-up and rate per 100 lb. for it:

R₁ = outside radius of coil in inches

S = r.p.m. of take up

$$\text{mean circumference of coil in feet} = \frac{\pi (R_1 + R)}{12}$$

$$= 0.262 (R_1 + R)$$

$$F = B \times S \times 0.262 (R_1 + R) 60 = 15.7 B S (R_1 + R)$$

$$\text{Cu. ins. in coil} = \frac{L}{490} \times 1728 = 3.527 L$$

Also cu. ins. in coil = $\pi W (R_i^2 - R^2)$
 $\therefore 3.527 L = \pi W (R_i^2 - R^2)$

Solve for R_i :

$$R_i = \sqrt{\frac{1.123 L}{W} + R^2}$$

$$\text{Then } F = 15.7 B S \left(\sqrt{\frac{1.123 L}{W} + R^2} + R \right)$$

$$\text{But rate} = A \left(\frac{5 M}{3 L B} + \frac{29.4}{W T F} \right) \quad (\text{Substitute for } F)$$

$$= A \left[\frac{5 M}{3 L B} + \frac{29.4}{15.7 W T B S \left(\sqrt{\frac{1.123 L}{W} + R^2} + R \right)} \right]$$

$$= \frac{A}{B} \left[\frac{5 M}{3 L} + \frac{1.87}{W T S \left(\sqrt{\frac{1.123 L}{W} + R^2} + R \right)} \right]$$

In a specific case, factors A , B , M , L , S and R are constant, so that the only variables are T and W . Thus $A = \$0.60$, $B = 2$, $M = 2$ min., $L = 70$ lb., $W = 1\frac{1}{2}$ in., $T = 0.010$ in., $S = 50$ r.p.m., $R = 6$ in.

$$\text{Piece-work rate per 100 lb.} = \frac{0.60}{2} \left[\frac{5 \times 2}{3 \times 70} + \frac{1.87}{1\frac{1}{2} \times 50 \left(\sqrt{\frac{1.123 \times 70}{1\frac{1}{2}}} + 36 + 6 \right)} \right] = \$0.06286$$

In making a table of rates for these mills, for coils of 70 lb., T and W would be left in the formula. It would then be written:

$$\text{Rate per 100 lb.} = 0.014286 + \frac{0.01122}{T W \left(\sqrt{\frac{78.61}{W}} + 36 + 6 \right)}$$

Any width can now be substituted and a rate for any thickness, of that width, is found by one division and one addition.

The formula would read, when $W = 1\frac{1}{2}$ in.

$$\text{Rate per 100 lb.} = 0.014286 + \frac{0.000486}{T}$$

Pounds per hour for a constant-speed take up is found by

$$P = 53.4 W T B S \left(\sqrt{\frac{1.123 L}{W} + R^2} + R \right)$$

The outside radius of a coil is:

$$R_i = \sqrt{\frac{1.123 L}{W} + R^2}$$

The inside radius of a coil is:

$$R = \sqrt{R_i^2 - \frac{1.123 L}{W}}$$

If E per cent efficiency is assumed, the piece-work rate per 100 lb. contains the factor:

For a constant-speed take up =

$$\frac{1.87 A}{E \times W T B S \left(\sqrt{\frac{1.123 L}{W} + R^2} + R \right)}$$

For wire moving at a fixed speed =

$$\frac{29.4 A}{E \times W T F}$$

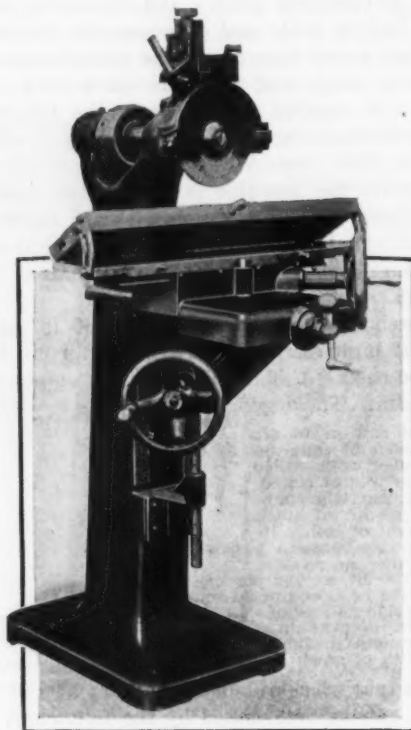
A self-supporting stack to take care of the hot blast stoves has been built for the blast furnace at Girard, Ohio, of the A. M. Byers Co., Pittsburgh. At the bottom the stack is 14 ft. in inside diameter, tapering in 45 ft. to 8 ft. $\frac{3}{4}$ in. in diameter and continuing at this diameter for 180 ft. for a total height of 225 ft. It is provided with a coping ring on top for keeping the moisture off the brick lining, also with a ladder and safety cage of such construction that the workman climbs between the ladder and the stack. In other words, there is a bar frame work extending from the ladder to the stack, creating a cage; ordinarily, there is a space between the ladder and the stack, and the safety cage is on the outside of the ladder.

The 16 foundation bolts are 3 in. in diameter, and they extend through a U shaped bracket forged from one solid piece of $\frac{5}{8}$ -in. plate. These brackets are 4 ft. high. The stack was built by the Sharpsville Boiler Works Co., Sharpsville, Pa.

Surface Grinder Equipped with Tilting Table

In addition to plain and swivel table styles, the Wilmarth & Morman Co., Grand Rapids, Mich., is placing on the market its No. 1 hand-feed surface grinder equipped with a tilting table, as shown in the accompanying illustration.

When grinding at vertical angles on a magnetic chuck it is frequently the practice to tilt or block up one edge of the chuck, which does not provide a substantial arrangement that is free from vibration. With the grinder equipped with a tilting table the chuck is



Graduations for Tilting Angle Are in Degrees

bolted securely to the table and the entire assembly tilted to the required degree, this arrangement being intended to provide a rigid foundation for the work, resulting in greater accuracy.

Suitable T-slots are provided to accommodate a magnetic chuck, vise and other fixtures, and graduations for the "tilting angle" are given in degrees.

Erie Railroad Contracts for Handling Freight

The Consolidated Freight Handling Co., incorporated by Youngstown, Ohio, capital, has contracted with W. A. Baldwin, director of the Ohio region of the Erie Railroad, to handle the road's less-than-carload freight through the freight houses at Cleveland, Akron, Youngstown, Warren, Barberton, Ashland and Mansfield in Ohio, Corry, Sharon and Meadville in Pennsylvania and Jamestown, N. Y. The scope of the company's business may be extended to include other points along the Erie. The effect of the arrangement will be to release the Erie from employment of freight house labor at the points where the contracts are operative. The Consolidated Freight Handling Co. will hire its own labor at the rates of pay effective in the various communities. Under terms of the contract, the freight handling company becomes the lessee of local freight houses and adjacent railroad property required for such work.

A similarity in names is causing some confusion, it is explained in a letter to the trade by the Wayne Machinery Co., Inc., Ft. Wayne, Ind., maker of machine tools and woodworking machinery. It appears that there is a Wayne Machine Co. on Ft. Wayne Avenue in Indianapolis, but there is no connection between the Machinery and the Machine companies.

Fluctuations of Steel and Iron Pipe Prices

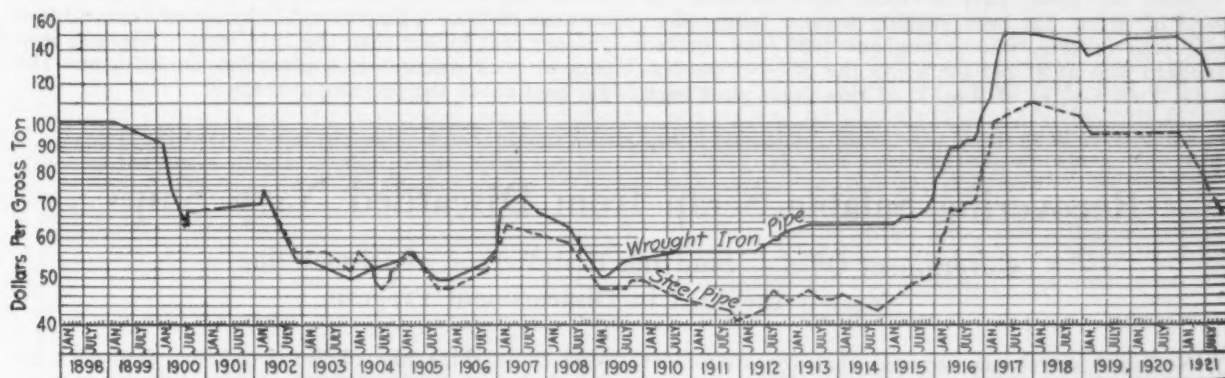
Trend of Quotations from 1898 to 1922 as Shown by Chart and
Tables—Wide Spread Which Was Almost
\$62 Per Ton in 1920

HEREWITH in chart form is told the story of the fluctuation in prices of steel and wrought iron pipe for a period of 23 years, based upon the basing or card discount on carload lots. The prices upon which the chart is based are found in the accompanying tables.

It will be observed that from 1898 to 1902 inclusive, prices of both kinds of pipe ran along about the same. In explanation it might be stated that during this period no very real idea of producing costs existed and so far as then was known costs were supposed to be about the same. This period also saw the real beginning of steel pipe as a competitor of wrought iron

is that while all manner of mechanical devices have been introduced in the manufacture of steel pipe to reduce the amount of hand labor, the making of wrought iron pipe has been and still is largely hand labor, and there has been no saving in production costs which machines would have permitted.

The drift of prices has been in keeping with that of all finished products. Pipe shared in the 1907 boom and in the collapse which followed in 1908 and also the business unsettlement which resulted from the dissatisfaction over the Payne-Aldrich tariff and the change in National Administration in 1912. We find steel pipe down to about \$40 a ton late in 1911, and



Wrought Iron and Steel Pipe Prices, 1898-1922

pipe, and the latter had such a firm grip upon consumers that the struggle for consumptive supremacy was a keen one. It will be observed also that since 1904 steel pipe has sold at a lower price than wrought iron pipe and that the spread between the two kinds widened for a number of years. At the close of 1920 the spread was almost \$62 per ton. The explanation

records of THE IRON AGE at the time note some large sales of line pipe which were made at least \$2 per ton below that figure. The market improved during 1912 and 1913, only to weaken again in the depression which developed in American business just after the outbreak

Wrought Iron Pipe							
Date of Change		Dollars Per Gross Ton Net, F.O.B. Mill		Date of Change		Dollars Per Gross Ton Net, F.O.B. Mill	
Sept. 1, 1898...	.55	\$100.80		Nov. 1, 1912...	.73	60.48	
Dec. 28, 1898...	.55	100.80		June 2, 1913...	.72	62.72	
Feb. 15, 1899...	.55	100.80		Feb. 11, 1915...	.72	62.72	
Mar. 1, 1900...	.59	91.84		May 1, 1915...	.71	64.96	
May 15, 1900...	.67	73.92		June 1, 1915...	.71	64.96	
July 1, 1900...	.70	67.20		June 17, 1915...	.71	64.96	
Aug. 25, 1900...	.72	62.72		Aug. 17, 1915...	.71	64.96	
Sept. 1, 1900...	.70	67.20		Nov. 1, 1915...	.70	67.20	
Mar. 1, 1902...	.69	69.44		Jan. 4, 1916...	.68	71.68	
Mar. 15, 1902...	.67	73.92		Jan. 20, 1916...	.66	76.16	
Nov. 12, 1902...	.76	53.76		Feb. 15, 1916...	.65	78.40	
Mar. 16, 1903...	.76	53.76		Feb. 29, 1916...	.64	80.64	
Dec. 31, 1903...	.78	49.28		Mar. 15, 1916...	.63	82.88	
Mar. 1, 1904...	.77	51.52		Mar. 29, 1916...	.62	85.12	
Mar. 13, 1904...	.76	53.76		Apr. 21, 1916...	.60	89.60	
June 1, 1904...	.77	51.52		July 24, 1916...	.60	89.60	
Jan. 2, 1905...	.76	53.76		Sept. 7, 1916...	.59	91.84	
Feb. 1, 1905...	.75 1/2	54.88		Nov. 1, 1916...	.59	91.84	
Mar. 1, 1905...	.75	56.00		Nov. 15, 1916...	.58	94.08	
Apr. 20, 1905...	.74 1/2	57.12		Dec. 4, 1916...	.56	98.56	
Oct. 2, 1905...	.78	49.28		Dec. 30, 1916...	.54	103.04	
Jan. 1, 1906...	.78	49.28		Feb. 14, 1917...	.52	107.52	
Oct. 12, 1906...	.76	53.76		Mar. 5, 1917...	.50	112.00	
Dec. 19, 1906...	.75	56.00		Apr. 2, 1917...	.44	125.44	
Jan. 25, 1907...	.70	67.20		May 1, 1917...	.38	135.88	
June 10, 1907...	.68	71.68		July 2, 1917...	.33	150.08	
Oct. 19, 1907...	.70	67.20		Nov. 6, 1917...	.33	150.08	
June 10, 1908...	.72	62.72		Jan. 1, 1919...	.36	143.36	
Feb. 19, 1909...	.78	49.28		Mar. 21, 1919...	.39 1/2	135.52	
Mar. 15, 1909...	.78	49.28		Jan. 17, 1920...	.34 1/2	146.72	
Aug. 4, 1909...	.76	53.76		Dec. 15, 1920...	.34 1/2	146.72	
Oct. 1, 1910...	.75	56.00		Mar. 1, 1921...	.29 1/2	157.42	
Oct. 2, 1911...	.75	56.00		Apr. 13, 1921...	.35 1/2	144.48	
Mar. 1, 1912...	.75	56.00		July 7, 1921...	.39 1/2	136.52	
Sept. 2, 1912...	.74	58.24		Sept. 1, 1921...	.44 1/2	124.32	
Oct. 1, 1912...	.74	58.24					

Steel Pipe							
Date of Change		Dollars Per Gross Ton Net, F.O.B. Mill		Date of Change		Dollars Per Gross Ton Net, F.O.B. Mill	
Feb. 21, 1900...	.59	\$91.84		Dec. 15, 1911...	.82	40.32	
May 1, 1900...	.67	73.92		June 1, 1912...	.81	42.56	
July 1, 1900...	.70	67.20		July 1, 1912...	.81	42.56	
Aug. 1, 1900...	.72	62.72		July 24, 1912...	.80	44.80	
Sept. 1, 1900...	.70	67.20		Sept. 10, 1912...	.79	47.04	
Mar. 1, 1902...	.69	69.44		Jan. 1, 1913...	.80	44.80	
Mar. 15, 1902...	.67	73.92		Apr. 12, 1913...	.79 1/2	45.92	
Nov. 12, 1902...	.75	56.00		May 27, 1913...	.79	47.04	
Apr. 1, 1903...	.75	56.00		Aug. 8, 1913...	.80	44.80	
July 18, 1903...	.75	56.00		Oct. 27, 1913...	.80	44.80	
Aug. 1, 1903...	.75	56.00		Feb. 2, 1914...	.79 1/2	45.92	
Dec. 31, 1903...	.77	51.52		Apr. 20, 1914...	.80	44.80	
Feb. 1, 1904...	.76	53.76		Nov. 2, 1914...	.81	42.56	
Mar. 1, 1904...	.75	56.00		Feb. 11, 1915...	.80	44.80	
July 1, 1904...	.78 1/2	48.16		May 1, 1915...	.79	47.04	
Sept. 3, 1904...	.79	47.04		Nov. 1, 1915...	.78	49.28	
Oct. 19, 1904...	.78	49.28		Jan. 4, 1916...	.77	51.52	
Nov. 1, 1904...	.77	51.52		Jan. 20, 1916...	.76	53.76	
Jan. 27, 1905...	.76 1/2	52.64		Feb. 15, 1916...	.75	56.00	
Feb. 1, 1905...	.76	53.76		Feb. 29, 1916...	.74	58.24	
Mar. 1, 1905...	.75 1/2	54.88		Mar. 15, 1916...	.73	60.48	
Apr. 20, 1905...	.75	56.00		Mar. 29, 1916...	.72	62.72	
Oct. 2, 1905...	.79	47.04		Apr. 21, 1916...	.70	67.20	
Nov. 1, 1905...	.79	47.04		July 24, 1916...	.70	67.20	
Jan. 1, 1906...	.79	47.04		Sept. 7, 1916...	.69	69.44	
Oct. 12, 1906...	.77	51.52		Nov. 1, 1916...	.69	69.44	
Dec. 4, 1906...	.76	53.76		Nov. 15, 1916...	.68	71.68	
Dec. 20, 1906...	.75	56.00		Dec. 1, 1916...	.66	76.16	
Jan. 24, 1907...	.74	58.24		Dec. 30, 1916...	.64	80.64	
Feb. 4, 1907...	.74	58.24		Feb. 14, 1917...	.62	85.12	
Mar. 14, 1907...	.73	62.72		Mar. 5, 1917...	.60	89.60	
June 10, 1908...	.74	58.24		Apr. 2, 1917...	.55	100.80	
Feb. 19, 1909...	.79	47.04		Nov. 6, 1917...	.51	109.76	
Sept. 1, 1909...	.79	47.04		Dec. 13, 1918...	.54	103.04	
Oct. 1, 1909...	.78	49.28		Mar. 21, 1919...	.57 1/2	95.20	
Jan. 1, 1910...	.78	49.28		Apr. 13, 1921...	.62 1/2	84.00	
Oct. 1, 1910...	.80	44.80		July 7, 1921...	.64 1/2	79.52	
Oct. 2, 1911...	.81	42.56		Sept. 16, 1921...	.68 1/2	70.56	
Dec. 1, 1911...	.82	40.32		Dec. 15, 1921...	.71	64.96	

of the World War. Then came the war demands, which at their height carried steel pipe to about \$110 per ton and wrought iron pipe to \$150 a ton for the base sizes.

Tubular goods were among the first of the finished steel products to rally from the depression which followed the signing of the armistice, Nov. 11, 1918, and it is doubtful whether there was ever before such a period of insatiable demand as that extending from the spring of 1919 to the summer of 1920. It was largely based on oil and gas well development, which had been restricted during the war, and because of the hindrances to production from labor and transportation troubles, not to mention considerable speculative buying, previously unheard-of prices were reached in oil country and line pipe. This development affected prices for merchant or standard pipe, for, of course, the very fancy prices which ruled for oil well and line pipe diverted production largely into those lines. The chart does not record this phase of price fluctuations since it deals only with the base discount on butt weld merchant pipe and card discounts had only slight relation to the prices which most independent companies obtained for oil country pipe in 1919 and 1920.

Since the latter part of 1920, down to date, the trend of prices has been steadily lower. Independent steel pipe makers, who throughout 1920 had quoted standard pipe at \$7 per ton above the price of the National Tube Co., as of Jan. 1, of this year, went back

to the National Tube Co. schedules. With business slack, observance of card discounts was slight and in the April effort at price stabilization prices were reduced, the base discount going to 62½ per cent, effective April 13, as compared with 57½ per cent, which the National Tube Co. had quoted from March 21, 1919, and the independents from Jan. 1, 1921. This cut failed to stimulate business and another one or two points, equal to \$4 per ton, was made, effective July 7. Still the demand failed to respond and with more sellers than buyers and none too strict observance of the regular discounts, another cut, this time of \$8 per ton in the "official" quotation, was made as of Sept. 16. This quotation was officially maintained until Dec. 15, when another \$5 reduction was made. The wrought iron price was not changed.

Present prices of steel pipe are the lowest which have prevailed in five years, but they still are almost 59 per cent above 1914 average. Peak prices for steel pipe, as disclosed by the price tables reached late in 1917, were 147 per cent above the 1914 averages. The decline in wrought iron pipe has been much slighter than that in steel pipe and the present price per gross ton of the base sizes of \$124.32 compares with the 1914 average of \$62.72, the current price being substantially 100 per cent higher than the 1914 level. Wrought iron pipe at peak prices, which came late in 1920, was 182 per cent above the pre-war average.

Recovering Salable Scrap from Discarded Navy Ships

Government Officials Studying Best Method of Dismantling
Vessels Included in Disarmament Program

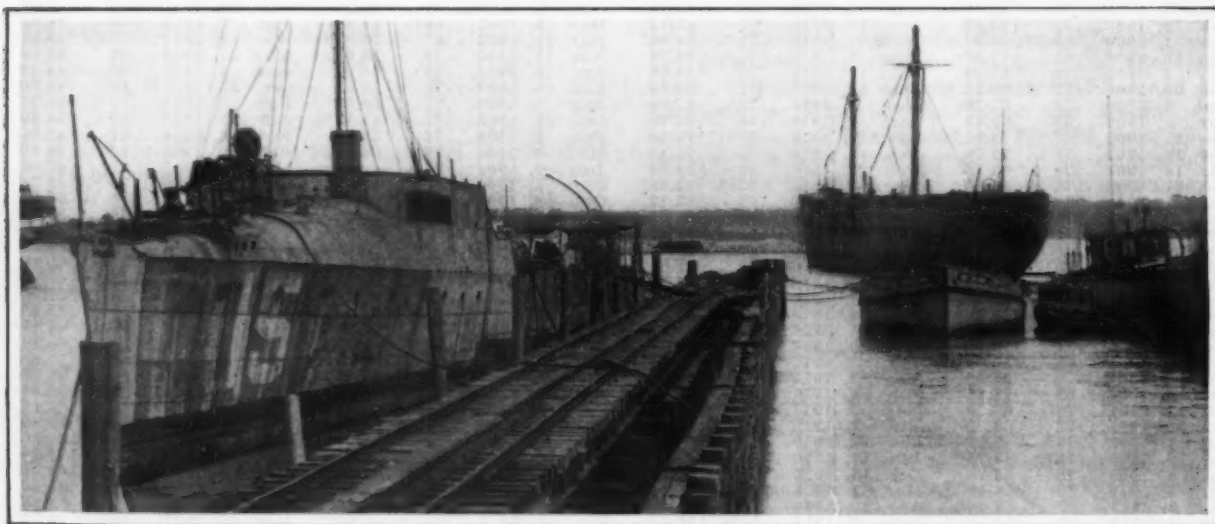
SINCE the news was received that the conference for the Limitation of Armament in Washington had agreed not only to restrict the building of battleships within the next ten years but to scrap many of the ships now in service, the question of the best method of demolishing these ships has been under consideration by Navy Department officials in Washington, and also by those companies which have done similar work in this country in the past.

Intimations have come from Washington that no plant in the United States is equipped at present to scrap large warships, and the suggestion has been made that the work might well be done in England, where some plants, it is stated, have done work of this character on an extensive scale.

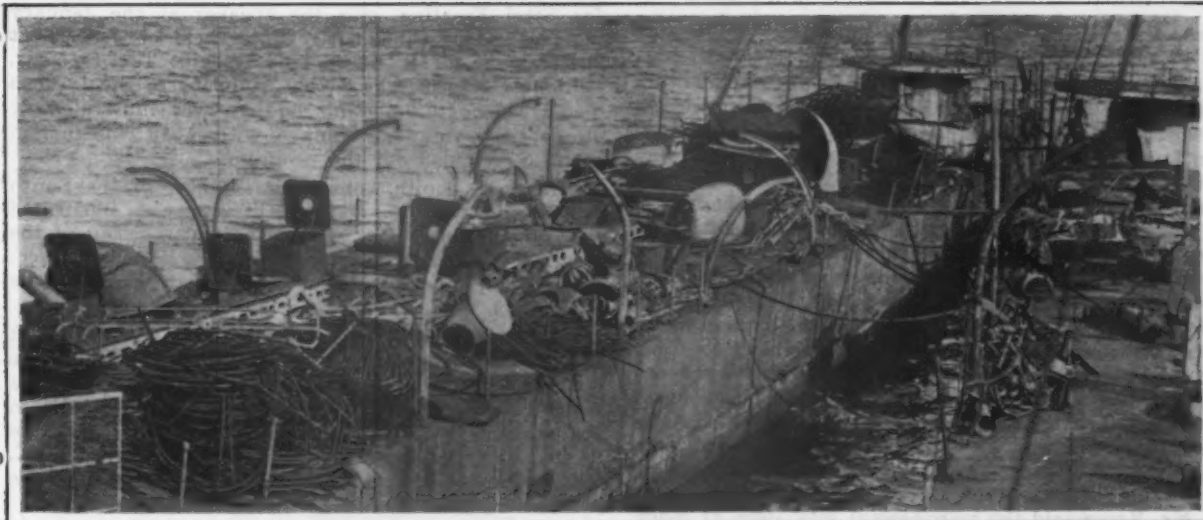
The steel trade in some quarters will undoubtedly take the point of view that it would be unfortunate to

send these ships abroad for demolition, inasmuch as the steel scrap which can be obtained from them is of value to American steel plants. Moreover, the production of good quality steel scrap has been at a minimum during the past year or more, owing to the general depression in industry, and the several hundred thousand tons of scrap which can be obtained in the demolition of the warships included in the disarmament arrangement will be exceedingly useful, especially if there should be a marked revival of steel manufacture in 1922.

The ships to be scrapped by the United States have a total displacement of 525,850 tons. Companies which have dismantled smaller vessels estimate that the total quantity of old material which can be obtained is about 70 per cent of the displacement tonnage; in this instance more than 360,000 tons will be available for



A Destroyer Being Dismantled at the Hitner Yard. In the background is an old wooden frigate, which has been stripped of salable metal parts



The Upper Works of a Discarded Naval Vessel Are First Dismantled and Then the Hull Plates Are Removed

re-melting. The great bulk of this is steel, but a considerable tonnage of brass and other non-ferrous metals is also obtained.

Most of the ships which in the past have been sold by the Navy Department for scrap have been light cruisers, monitors, destroyers and sub-chasers. Many of the latter were destroyed after the late war, their use in the peace-time activities of the Navy not being



This Row of Destroyers Was Recently Scrapped at the Hitner Yard at Bridesburg, near Philadelphia

required. The destroyers were bought from the Government at about \$10,000 each, and the work of dismantling them was done at yards on the Atlantic and Pacific Coasts. The Henry Hitner's Sons Co., whose plant is at Bridesburg, on the Delaware River near Philadelphia, has done much of this work, and probably will be a bidder for the ships included in the disarmament program when they are offered for sale.

In some instances the Navy has used discarded ships for targets. After sinking them in shallow water they have been raised and then sold for scrap. Some have been converted into freight vessels, pleasure yachts, etc., but the terms of the present international agreement will doubtless provide for complete destruction, so that not even the hulls will remain.

The method which the Hitner company has employed in demolishing naval vessels is to moor them alongside dock at its Bridesburg plant; then strip the upper-works of each ship, including machinery. In the latter, much of the most valuable non-ferrous metal scrap is found. When nothing but the hull remains, the top row of plates is removed by electric or oxy-acetylene cutting. This work is continued down as close to the water line as possible, and then the remainder of the hull is towed up on the beach at high tide, and at low tide another row of plates is removed. This process is repeated at each high and low tide until the keel of the ship can be towed onto the land, when demolition is completed. The steel is broken up into charging box sizes in the Hitner yard, and shipped to steel plants for re-melting.

A serious problem in connection with the demolition of large ships will be the removal of heavy armor plate.

If the Navy Department follows its usual method, the ships to be scrapped under the disarmament program will be sold to the highest bidders. Before the results of the Limitation of Armament Conference had become known, the Navy Department had decided to sell some of its obsolete ships, and lists were prepared and published. Bids were taken on about a dozen ships on Dec. 15, and another list, on which bids will be opened Jan. 16, includes some battleships listed in the disarmament program, such as the Maine and Missouri. Upon the results of this latter sale will possibly depend, to some extent, the method that the Navy Department will employ for the disposal of the remainder of the ships to be dismantled.

New Record for Coal Production

UNIONTOWN, PA., Jan. 23—A new record for coal production for any one mine during a single month in the history of the Connellsville bituminous region, was set up by the Ronco plant of the H. C. Frick Coke Co., during December. Working twenty-five days during the month, 124,000 tons of coal was hoisted from the Ronco shaft. Establishment of this record in the face of present industrial conditions is remarkable. All of the coal was shipped by river to the Clairton by-product plant of the Steel Corporation. It is planned to increase production at the Ronco plant until a monthly output of 150,000 tons is reached, a record expected to be attained within six months. W. J. Culleton is superintendent at the plant.

At other Frick plants in the region, production is being maintained on approximately the same basis as has been maintained during the past three months: 35 per cent coke and 55 per cent coal.

Independent coal and coke output in the region continues to show a slight increase. No change, however, in the production scale is noted at plants of W. J. Rainey, Inc.

Prospects of a national coal mining strike the latter part of March will not affect the Connellsville region, except in increase production. Present wage scales in this region are considerably under the scales in the union fields, and production has been maintained on a higher general average than in union fields. No changes in scales are expected during the first quarter in the region.

The Seaboard Steel & Iron Corporation, William F. Holl president, which was organized in Baltimore in June, 1921, is now occupying a new warehouse at Ostend and Paca streets. The building is 155 x 170 ft., divided into five bays, each of which is provided with overhead crane as well as other equipment for handling and general steel warehouse service. The company will carry a full line of steel, including structural shapes, tubes, cold rolled, cold drawn and alloy steel, tool steel, shafting, sheets and plates, rivets, etc.

Pittsburgh Foundrymen's Association

PITTSBURGH, Jan. 22.—In his talk before the Pittsburgh Foundrymen's Association at its regular monthly meeting at the General Forbes Hotel, last week, Herbert M. Ramp, superintendent of foundries, American Locomotive Co., Dunkirk, N. Y., whose subject was "Defective Castings," declared that his experience had convinced him that 50 per cent of the defective castings were directly attributable to the sand or the sand mixture used. There should be the same care in the inspection of sands as there is of other materials, the speaker urged, pointing this out as one of the duties of the foundry chemist. He made a strong plea for a greater factor of safety, not only with regard to sands but with flasks and patterns as a means to the prevention of bad castings, indicating the great care that usually was exercised in providing the machine shop with the latest and most up-to-date tools, which was quite the reverse of what was done in the matter of equipping the foundry.

Mr. Ramp said the management was often as much to blame for bad castings as were the foundrymen. The management could help matters by taking only such business as the foundry was adapted to handle, pointing out that strange work in the best of hands was subject to loss and delays. Too much should not be expected from the molders who have not control over the materials provided them. He asserted that users of castings rather than the makers had written the chemical standards now in use. Chemistry, he claimed, had not been established and that it still was necessary to revert to practical tests as a way out of troubles. In this connection he urged the importance of uniformity of materials.

Benjamin Fuller, Titanium Alloy Mfg. Co., Niagara Falls, N. Y., a former president of the Pittsburgh Foundrymen's Association and who some time ago was made a life member of the organization, was present and spoke in a reminiscent vein. C. S. Koch, Fort Pitt Steel Casting Co., McKeesport, Pa., George B. Koch, superintendent of foundries, Pennsylvania Railroad, Altoona, Pa., and Samuel D. Sleeth, foundry superintendent, Westinghouse Air Brake Co., Wilmerding, Pa., also spoke.

It was announced by C. S. Koch that the annual convention of the American Foundrymen's Association would be held May 22 and provided the proper facilities could be secured, would be held in Cleveland.

Meetings of Technical Sections

Dexter Kimball, president American Society of Mechanical Engineers, was the guest of honor at a banquet and reception tendered by the Milwaukee Society on Saturday evening, Jan. 21, at the Milwaukee Athletic Club. At the regular monthly meeting and dinner held Jan. 18, Fred A. Parsons, chief engineer Kemp-Smith Mfg. Co., gave an illustrated address on "Power Required for Cutting Metal."

At a recent meeting of the Rockford, Ill., chapter of the American Society for Steel Treating, Otto F. Muehlemeyer, metallurgist of the Barber-Colman Co. of that city, presented an exhaustive paper on the hardening of steel.

A joint dinner of Boston sections of the American Institute of Electrical Engineers, American Society of Mechanical Engineers, and American Society of Heating and Ventilating Engineers was held Tuesday evening, Jan. 24, at the City Club, Boston. Following the dinner, W. L. Saunders and Henry de B. Parsons, New York, discussed the Great Lakes-St. Lawrence tide-water project.

S. P. Rockwell, metallurgical engineer, Hartford, Conn., inventor of the Rockwell hardening tester, covered in a thorough manner the subject of carburizing and case hardening, at a meeting of the Boston Chapter, American Society for Steel Treating, Friday evening, Jan. 20, at the Boston City Club. He paid special attention to soft spots, cracks, etc., giving causes and remedies. Lantern illustrations were used.

J. P. Gilligan, president of the American Society

for Steel Treating, was the speaker at the January meeting of the Cincinnati chapter held on Jan. 23 at the plant of the R. K. LeBlond Machine Tool Co. Mr. Gilligan's subject was "What Happens to Steel When You Quench It?" and his address was illustrated by stereopticon views. A dinner, with music and motion pictures, rounded out the program.

Harry F. Smith, consulting engineer of the Smith Gas Engineering Co., Dayton, Ohio, gave an illustrated talk on "Producer Gas" before a joint meeting of the Engineers' Club of Cincinnati and the Cincinnati section of the American Society of Mechanical Engineers on Jan. 19.

Dr. Zay Jeffries, Cleveland, Ohio, was the speaker at the January meeting of the Cincinnati section of the American Chemical Society on Jan. 18. His subject was "Some New Developments of Metallography," and in the course of his lecture he described the application of the X-ray in the crystal analysis of metals. G. K. Elliot presided at the meeting, which was held in the chemistry building of the University of Cincinnati.

Industrial Engineers Spring Convention

The national spring convention of the Society of Industrial Engineers will be held at the Hotel Statler, Detroit, April 26 to 28. The major subject will be the influence of industrial engineering upon the earnings of capital and labor.

A general survey covering the effects of industrial engineering upon the safety of invested capital, the regularity of dividends, the continuity of production, the satisfaction of labor and the protection of the public will be considered at the opening meeting under the subject of "How Industrial Engineering Serves Industry." Another topic at this session will consider how industrial engineering serves the chief administrator. This will be followed by an evening meeting on industrial engineering as serving the executive, the sales manager and the factory manager.

Sectional meetings of the sales, production, finance and accounting, and industrial relations groups will be held as heretofore, and as also a banquet, which is scheduled for the evening of April 27. The fatigue elimination committee will hold a dinner meeting, following which an evening session will be devoted to the subjects of how industrial engineering reduces production costs, and how it increases the productivity of each industrial unit. Another topic of this meeting will be "Practical Tests of Employees."

An afternoon session with the topic, "How Can Industrial Engineering Increase the Profits and Insure the Stability of Both Capital and Labor?" will cover the subjects of the conservation by the workmen and by the management of material, of plant and equipment, of labor and of workmen. At these meetings 15-min. papers will be read, which will be followed by 30 min. of discussion on each subject.

An unusual banquet is announced by the Providence Engineering Society to be held on Tuesday evening, Jan. 31, at the Narragansett Hotel, Providence. A part of the novelty will lie in the appearance in their initial performance of the "P. E. S. Players." Short addresses are also scheduled. One of these is by Floyd W. Parson, editorial director *Gas Age Record*, on "The Engineer in Public Service," and another by Daniel A. Mackay, captain of the Northwest Mounted Police, on "Public Service in the Northwest." Horace T. Almy, City Engineer's Office, Providence, is in charge.

The New England Iron and Hardware Association will hold its twenty-ninth annual banquet Tuesday evening, Feb. 7, at the Hotel Somerset, Boston. A reception will be held at 6 p. m. and dinner at 6.30 o'clock. Frank W. Brigham, Bethlehem Steel Co., Boston, is chairman of the committee of arrangements.

The annual meeting of the Iron and Steel Institute will be held May 4 and 5 at the House of the Institution of Civil Engineers, London, England. The usual dinner will be held on the evening of May 4.

Machine for Welding Large Thin Tubing

A new oxy-acetylene tube-welding machine for quantity production of large diameter, thin-gage tubing has been brought out by the Davis-Bournonville Co., Jersey City, N. J. It is intended for use in tube plants where it will be set up and used for long runs on one size of tubing only.

The maximum capacity is 6 in. diameter, 10-gage tubing. By using rolls grooved to the diameter tubing



Oxy-acetylene Tube Welding Machine for Quantity Production. The maximum capacity is 6 in. diameter, 10-gage tubing

desired the machine can be set up for any size within the capacity. Rolls for all diameters of tubes are of the same size overall, the mean center distances of the mating gears remaining always the same.

The machine has two pairs of rolls, one set being the feed rolls and the other the welding rolls. The drive is by belt to the cone pulley mounted on a shaft, as shown in the accompanying illustration, a pinion on this shaft driving in turn a spur gear keyed to a worm shaft, carrying two worms. Motion is transmitted to the feed and the welding rolls through worm wheels mounted on the spindle of each pair of rolls. The worm wheel driving the feed rolls is in a vertical position and that driving the welding rolls, in a horizontal position. The back welding roll is fixed in place and the front roll is adjustable, the spindle bearing being in a slide, the position of which is controlled by a screw and handwheel. The feed rolls are also adjustable. Annular depressions are provided on top of the welding rolls for water cooling and a circulatory system can be attached where required.

The welding torch is the company's multiple jet, water-cooled type, both the tip and the barrel of the torch being cooled by circulation of water. The torch holder provides for vertical and horizontal adjustment of the torch and for varying the angle at which the tip is presented to the seam to be welded.

Tax Claims for Machinery Amortization

Chronometric valuations was the subject of an address by William F. Wooster, vice-president Lloyd-Thomas Co., appraisers, 75 Fulton Street, New York, before the Jan. 19 dinner and meeting of the New York section of the Industrial Cost Association at Keen's Chop House, New York. Chronometric valuation, said Mr. Wooster, is valuation established over a period of time. Invested capital, depreciation, amortization and amended returns to the Government were

covered. Mr. Wooster laid particular stress upon amortization claims and amended returns based upon a revision of depreciation allowances. Amortization claims on machinery and other equipment used for war work and no longer of value for use in production, but with a resale or scrap value, must be filed before March 15 to be considered by the Government.

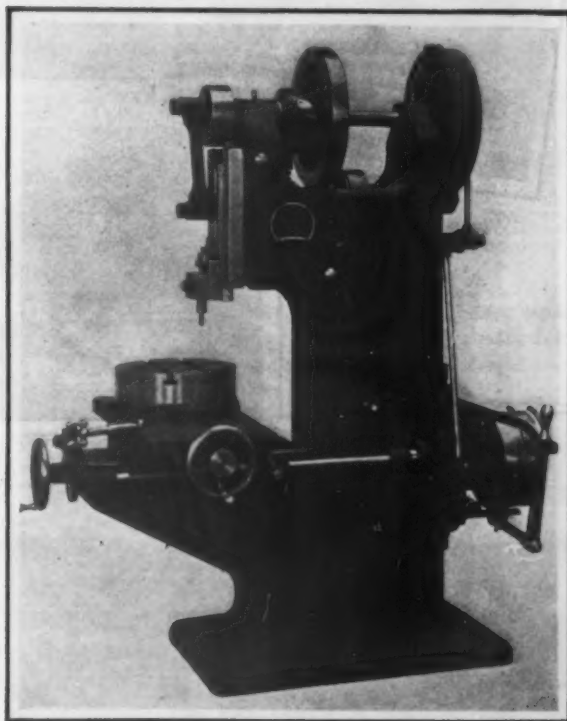
Mr. Wooster explained the governmental attitude on returns for depreciation and showed how by refiguring the depreciation and valuation of a plant from the time of its opening to the present it is possible sometimes to save considerable sums on returns. The address was followed by general discussion of amortization and amended returns.

New Die Slotting Machine

A vertical slotting machine for use in making round, square and irregular-shaped punches and dies has been placed on the market by the Peters-Bossert Co., doing a general machining business, Cincinnati.

The machine is shown in the accompanying illustration. The ram is incased in a vertical slide, fitted with a gib, and driven by an adjustable crank on the main shaft which carries a crank pin that can be adjusted to give any length of stroke up to 4 in. The ram is also slotted and fitted with an adjustable pin to change the location of the stroke to suit the work.

The slide is hinged on the upper end to permit movement of the ram on the lower end for obtaining the required amount of clearance. The lower end of the slide is connected with a toggle joint arrangement operated by an eccentric on the main shaft, which in turn moves the ram forward, while in motion on a curve on the down stroke, and clears the cut on the up stroke. This, it is claimed, produces an arc-cut in dies, so much required by modern die makers. This clearance can be changed to suit requirements. By means of the positive clearance thus provided, the use of the clapper box



The Slide Is Hinged on the Upper End and Connected with Toggle-Joint Arrangement at the Lower

has been successfully eliminated, it is said, and with it the objectionable features of the clapper box.

By the use of a pull pin the cam can be changed quickly to make the straight cut for the punch part. Cross, longitudinal and circular hand feeds are provided, each being operated with a separate screw and hand-wheel. Power feeds are also furnished. The machine has a variable gear speed box mounted inside of the frame, giving three changes of speed, operated by a shifting lever located outside of the frame.

American Sheets Largely Used in Japan

New Fire Laws Will Cause Increasing Imports—Galvanizing Done in Japanese Plants—Great Variety of Building and Other Uses

TOKYO, JAPAN, Dec. 21, 1921.—An interesting development of American trade with Japan has been a notable increase of exports of thin black sheets from the United States to this country in the past half year. These sheets are employed for a great variety of purposes and new uses are constantly being discovered by the Japanese people. It is estimated that Japan imported fully 100,000 tons of American sheets in 1921. With the exception of a very small proportion of the tonnage imported these thin sheets are galvanized in Japan. Already a number of Japanese galvanizing plants are in operation, with a total production of about 9000 gross tons per month, besides which a company, having works at Kawasaki, at which it rolls black sheets as well as galvanizes them, has a present monthly capacity

of about 300 tons of No. 30 gage sheets. This output will be increased to about 500 to 600 tons per month by the middle of 1922. The cost of galvanizing imported black sheets is understood to vary from Yen 0.30 to 0.40 (at present exchange the equivalent of about 14 to 19 cents) per sheet of 6 x 3 ft.

Sheets Used to Reduce Fire Risk

The principal use to which thin sheets are applied in Japan is that of providing a relatively cheap substitute for the highly inflammable material of which from time immemorial Japanese dwelling houses and other buildings have been constructed. While the Japanese have adopted western architecture and modes of construction for their public buildings, business offices and



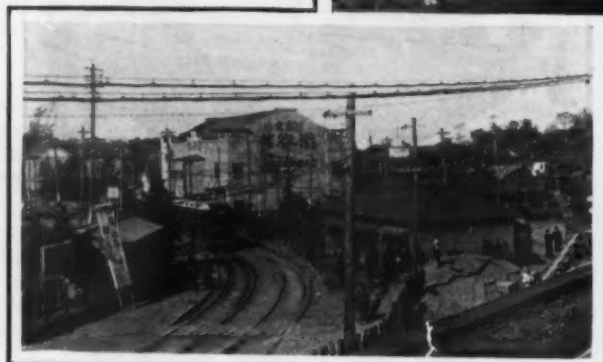
One



Two



Three



Four



Five

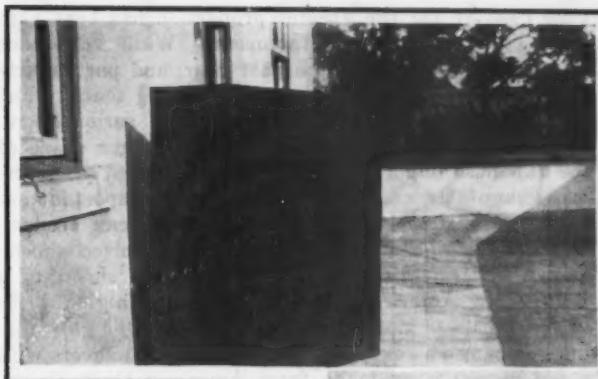
1. Throughout the country, the thatched roofs of innumerable small cottages are being gradually replaced by galvanized sheets. The illustration shows this transition in progress—galvanized sheets at the top of the thatched roof shown in the foreground, corrugated sheets for the coping, and galvanized roofing and siding on the other buildings in the background of the picture.

2. A common street view in the environs of Tokyo. Over the shops are signs made of sheets, the frames of which are usually of wood. Some of these signs are of plain black sheets, painted; most of them, however, are of galvanized sheet steel. The small carts for merchandise delivery, shown in the center of the picture, are also constructed of galvanized sheets.

3. A typical building, covered with galvanized sheets to comply with the regulations requiring that such buildings in close proximity to railroads be covered with non-inflammable material.

4. The junction of the Tamagawa Railway with a branch line of the Imperial Government Railways. The building in the background is the Shibuya moving picture house, roofed and sided with plain galvanized sheets, the top being painted but the sides unpainted. In the left foreground are several signboards made of galvanized sheets.

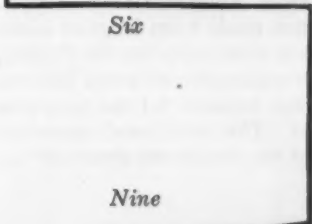
5. A combined store and dwelling house, recently erected close to a railroad track, almost entirely constructed of galvanized sheets.



Six



Seven

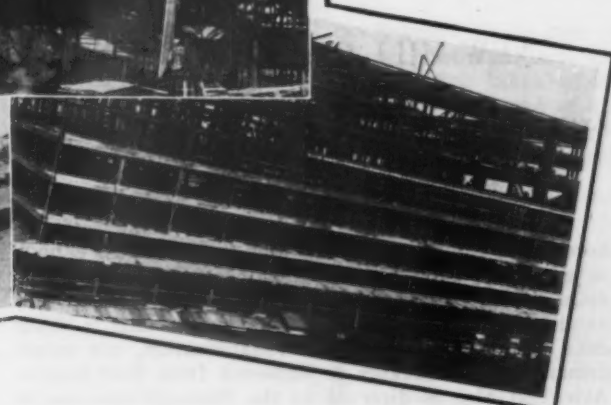
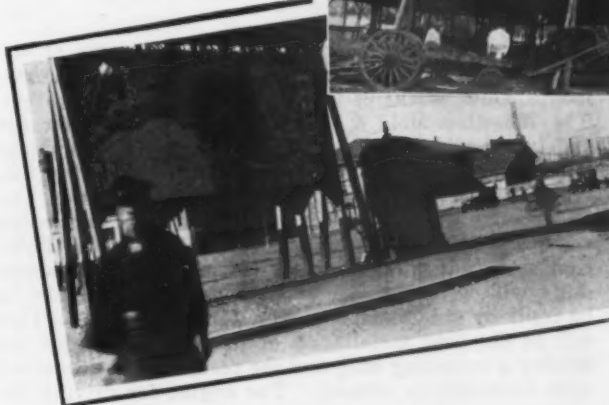


Nine



Eight

Ten



6. In every Japanese home there is at least one "tansu," or clothes chest. The one shown is trimmed with thin sheets, painted.

7. Fence surrounding a Buddhist temple. The lower part is made of corrugated sheets. The roof of the second building shown is a combination of tiles and plain galvanized sheets, which are painted red. This feature is exceptional, as while the use of paint for the preservation of steel material is spreading in Japan, it is by no means general.

8. A section of a temporary building, covered with galvanized sheets, which was constructed in the center of the city

of Tokyo, close to the central railroad station, for the celebration of the 50th anniversary of the operation of railroads in Japan. It had seating capacity and dining room accommodation for over 3000 persons.

9. A map of the city of Tokyo, facing the Central Railroad station, is painted on a huge sign made of galvanized sheets.

10. The Marunouchi Building, in course of construction. It is the largest building in the Far East, and in its construction upward of 5000 tons of American structural steel have been used, aside from the large amount of galvanized corrugated sheets as shown.

factories in the large cities, they very generally have retained for their homes the ancient, time-honored types of structure and modes of construction. Thus in Tokyo, which has a population of 2,000,000 and an area of 31 sq. mi. (the boundaries of which will soon be extended to include, under a single municipal government, an area of over 100 sq. mi. and a population of 3,500,000) the curious contrast is presented of a large number of public and business buildings similar to those of the great cities of Europe and America, in close proximity to, in fact surrounded by, immense numbers of the homes of the people—small wooden bungalows of one or two stories, constructed of highly inflammable material, with paper windows, charmingly quaint and old-fashioned, but highly dangerous in the event of a conflagration. In fact, disastrous conflagrations are frequent in Japan.

In May, 1919, regulations were promulgated in many districts, requiring the use of non-inflammable material, such as tiles or steel sheets, for the roofs of all new buildings, and also requiring the reconstruction, within four years, with such material, of old roofs in congested districts and along or in close proximity to railroads. The enforcement of these regulations, however, is within the discretion of the police authorities in each locality, depending upon circumstances. As the present cost of galvanized sheets is about one-half that of tiles covering an equal area, and there is a saving in time and labor in the installation of the former as compared

with the latter, there has been developed a heavy and constantly increasing demand for galvanized sheets for roofing purposes. Another advantage is that sheets are considered more durable than tiles or slate, particularly in the northern part of the country, where heavy snows prevail and tiles or slate have proved inadequate to withstand the added stress of the weight of snow. On the other hand, slate and tiles are largely used in southern Japan, where climatic conditions are less severe.

The accompanying photographic views give a good idea of the conditions which already have led to a large use of thin sheets and that make it quite certain that American sheet mills will be called on to make further good-sized shipments to Japan in the future.

Varied Uses of Galvanized Sheets

In a good many cases a transition is seen from the ancient style of construction of Japanese dwelling houses to what may be called the semi-foreign style, the entire covering of the houses being of galvanized sheets. An interesting feature is that plain flat sheets are rapidly replacing the corrugated variety. Both, however, are still largely used for roofing and siding of buildings generally, from moving picture houses and other large structures down to the smallest cottage, as also for fencing. Among the many uses of plain galvanized sheets are: for gutters, leaders and drain pipes of buildings; for copings of walls; for lining

wooden pipe; for covering wooden pipe crossing bridges; for stove pipe; for buckets and pails of all sizes, down to as small as one pint capacity; for signboards, replacing wood; for merchandise carts and wagons; for sliding doors; for shutters and double doors for warehouses; for show-case shutters; for replacing wood for paneling purposes; for display boards for posters, and for various kitchen utensils. Black sheets are also used for a variety of purposes, such as stove pipes, both inside and outside of dwellings, although galvanized stove pipe is more frequently used outside, on account of the humidity of the climate; signboards, of black sheets painted, although galvanized sheets are more generally used for this purpose; the Japanese "tansu" or clothes chest, as in the illustration; various kitchen utensils; locks and door trimmings; cheap shovels; stamped ware, and a variety of small articles, such as enameled cups, plates, basins and spoons.

Preference for American Sheets

The thin black sheets imported into Japan come from the United States and Great Britain, but for some

time past by far the greater proportion has been supplied by American manufacturers. While conditions in Great Britain during the past year, and particularly the strike of coal miners and the resulting scarcity and high prices of raw material and fuel, seriously restricted British exports of sheets, the larger share of the Japanese imports of this material secured by American manufacturers has been due, to an important extent, to the superior quality of the American product. In fact, certain Japanese brands of galvanized sheets, known to be obtained by galvanized black sheets of a well-known American brand, command a higher price in the Japanese market than any others. One galvanizing company in Tokyo brands its galvanized sheets with a red pigeon when made from American black sheets, and with a green pigeon when made from English black sheets. An additional price is obtainable for the former, even though the latter have undergone an extra process of re-annealing, to make them suitable for the purposes for which they are intended. This additional operation is unnecessary in the case of the American sheets of the make referred to above.

NEW MILL CONSTRUCTION

Extensive Improvements of Wheeling Steel Corporation at Steubenville and Portsmouth

WHEELING, W. VA., Jan. 23.—Steel manufacturers here commonly take the view that good business cannot be expected until the second half of the year. It is pointed out that so long as the railroads are bound hand and foot by the Government, and nothing is being done toward their financial rehabilitation, not much demand can reasonably be expected from that source. Attention also is directed to the financial distress in the important agricultural districts of the country, which naturally spells little if any buying of implements until the farmers have money, and they hardly will be thus provided until this year's harvests are gathered and begin to find their way to market. In addition to these factors is the belief that few investors will care to capitalize the current labor charges in new construction and that consequently much needed new building will be deferred until labor costs are more nearly in line with those for building materials. There must be liquidation not only of building trade labor rates, but also of coal prices, miners' wages, railroad freight and railroad labor, it is argued, before confident buying of steel can be expected, and these problems are likely to be difficult of solution and also to take considerable time.

Wheeling Steel Corporation officials believe that eventually there is going to be a good steel market, judging from the plant betterments and extensions now in progress at the works at Steubenville and Portsmouth, Ohio. Contract for the buildings to house the rod and wire mill at the latter point was placed several weeks ago. With that plant completed, the company will not only be able to supply the requirements of its subsidiary, the Wheeling Corrugating Co., for pails, barrels, etc., but through the latter, which has warehouses in various parts of the country, will become a factor in the wire products market. For this plant a continuous rod mill of somewhat special design, will be furnished by the Morgan Construction Co., Worcester, Mass. Much of the wire drawing, fence and nail machinery has been secured. There remains to be installed pickling, annealing and galvanizing equipment. The company will build also at Portsmouth a boiler plant and a gas producer and will increase its storage facilities.

At Steubenville the enlargement of the open-hearth furnaces has compelled increases in the rolling equipment to take care of the greater output of steel. A 35-in. blooming mill will be furnished by the Mackintosh-Hemphill Co., Pittsburgh, equipped with its latest

type of manipulator, having many refinements of the original, which by the way was developed at the Portsmouth, Ohio, works of the Wheeling Steel Corporation. The Wheeling Mold & Foundry Co. has the order for the tables and transfers, while the shears and intensifier will be furnished by the Morgan Engineering Co., Alliance, Ohio, and not the Morgan Construction Co., Worcester, Mass., as previously reported. The latter some time ago took the order for an 8-stand 19-in. continuous bar mill. Both the blooming and continuous mills will be driven by 4-cylinder uniflow engines to be built by the Nordberg Mfg. Co., Milwaukee. This will be the first installation of this type of engine for driving a reversing mill, and the results will be watched with considerable interest. The engine for driving the continuous mill is identical with that for the blooming mill, except that it is equipped with a governor.

To supply steam for these engines, the company will build a new boiler house with boilers of 250-lb. pressure and 150-deg. superheat. Ultimately a new power plant will be built and by means of turbo-generators sufficient power will be secured to make the company independent of outside sources of supply. The finishing end of the 45-in. mill is being remodeled. One of the skelp mills is being taken out to make way for a new gas producer which will be connected up with two new 5-hole soaking pits, with electrically operated covers. Plans also call for a new storehouse, more stockyard capacity, and the installation of 10 or 12 new cranes, including two 150-ton ladle cranes. Altogether, the company will spend about \$5,000,000 at the two plants.

Manganese Ore in 1921

The domestic shipments of high-grade manganese ore, containing 35 per cent or more metallic manganese, amounted to about 13,000 gross tons in 1921, of which more than 10,000 tons was shipped from Montana, according to H. A. C. Jenison, of the U. S. Geological Survey. The shipments of ore containing 10 to 35 per cent of manganese amounted to about 72,000 tons, most of which was shipped from Minnesota. The shipments of manganiferous and ferruginous manganese ore amounted to about 14,000 tons.

The net imports for the first eleven months of the year amounted to 386,405 tons of high-grade ore and oxide. Of this Brazil contributed 247,568 tons and India 113,730 tons.

The most important event that may affect the future of the domestic industry was favorable action by the House of Representatives on a proposed tariff on imports of manganese ore of 1 cent per pound of metallic manganese content of ore or of concentrates containing more than 30 per cent of metallic manganese. The measure has not been reported on as yet in the Senate.

Further Gains in Iron and Steel Exports

December Shows Advance Over November—Best Month Since May—Year 1921 Under Half of 1920; Sheets and Welded Pipe Only Items Greater in 1921

WASHINGTON, Jan. 24.—Recovery in exports of iron and steel, which has been gradual since last September, was further reflected during December. The total of 28 products for that month was 134,415 gross tons, valued at \$29,502,440, as compared with 122,290 tons, valued at \$28,543,142, in November. The total for

Exports, January, 1920, to December, 1921, Inclusive

	All Iron and Steel	Gross Tons Pig Iron	Semi-finished Material
Calendar year 1919...	4,239,837	309,682	258,907
January, 1920.....	333,601	18,468	19,937
February.....	308,185	15,739	22,693
March.....	417,216	22,740	30,444
April.....	395,120	14,608	19,032
May.....	420,359	13,032	16,370
June.....	402,707	17,075	29,811
Fiscal year 1920.....	4,212,732	248,126	288,766
July.....	458,866	29,647	17,243
August.....	431,484	22,645	20,920
September.....	409,200	22,724	18,113
October.....	452,015	17,296	11,853
November.....	434,297	13,929	7,042
December.....	498,765	10,055	3,415
Calendar year 1920.....	4,961,851	217,958	216,873
January, 1921.....	547,394	3,710	315
February.....	393,328	1,307	92
March.....	230,635	2,320	1,023
April.....	162,592	1,234	678
May.....	142,551	2,541	749
June.....	119,081	1,689	1,106
Fiscal year 1921.....	4,168,619	129,541	82,549
July.....	86,523	2,744	363
August.....	75,827	2,424	2,447
September.....	95,169	3,078	1,318
October.....	106,582	2,830	153
November.....	122,290	1,299	1,869
December.....	134,415	2,550	250
Calendar year 1921...	2,213,042	28,305	10,363

1921, however, showed a sharp decline of 54 per cent under the exports for 1920, aggregating only 2,213,042 tons, valued at \$607,427,146, as against 4,820,016 tons, valued at \$1,112,835,237, for 1920.

Imports of twelve iron and steel products in De-

Exports of Iron and Steel—Gross Tons

	December 1920	December 1921	Twelve Months Ending December 1920	Twelve Months Ending December 1921
Ferromanganese.....	551	50	3,454	690
Ferrosilicon.....	29	50	632	368
Pig iron.....	9,475	2,450	212,742	27,247
Scrap.....	12,805	4,256	219,250	37,117
Bar iron.....	5,823	132	46,648	12,338
Wire rods.....	4,785	3,338	116,775	18,506
Steel bars.....	63,791	14,779	624,587	188,595
Billets, ingots, blooms.....	3,415	250	216,873	10,363
Bolts and nuts.....	4,334	1,124	38,945	24,230
Hoops and bands.....	4,415	1,639	53,453	20,280
Horseshoes.....	92	37	1,830	614
Cut nails.....	591	58	3,858	1,094
Wire nails.....	12,187	3,720	93,178	28,109
All other nails, includ- ing tacks.....	1,435	316	12,432	4,692
Cast pipe and fittings.....	12,519	1,525	68,862	48,523
Welded pipe and fittings.....	39,192	12,896	284,727	345,279
Radiators and cast house boilers.....	508	133	7,333	3,408
Railroad spikes.....	1,409	372	12,138	8,164
Steel rails.....	52,986	14,943	594,684	322,107
Galvanized sheets and plates.....	11,248	3,936	108,368	55,990
All other sheets and plates.....	1,864	419	32,158	12,414
Steel plates.....	114,554	8,336	920,058	335,857
Steel sheets.....	17,730	34,363	169,244	193,428
Ship plates, punched and shaped.....	2,132	38	42,829	9,570
Structural steel.....	63,496	9,422	493,655	297,022
Tin andterne plates.....	20,955	1,170	226,410	107,726
Barb wire.....	13,391	876	134,174	29,976
All other wire.....	23,103	5,787	190,968	69,335
Total.....	497,765	134,415	4,820,216	2,213,042

cember showed a decline under November, amounting to only 9309 tons, valued at \$1,964,159, as compared with 10,610 tons, valued at \$2,041,772, in November.

For the year 1921 the decline in imports amounted to 71 per cent, when compared with 1920, the amount in 1921 being 121,058 tons, valued at \$28,751,729, as against 417,581 tons, valued at \$50,305,603, in 1920.

Imports of manganese ore in December amounted to 14,900 tons, valued at \$75,770, as compared with 8620 tons, valued at \$49,681, for November. For 1921, imports of manganese ore totaled 401,354 tons, valued at \$3,365,732, as compared with 606,937 tons, valued at \$12,230,922, for 1920.

Exports of machinery for December were valued at \$15,068,096, as compared with \$14,436,849 for November; for 1921 the total was valued at \$290,414,115, as compared with \$462,933,704 for 1920, a drop of 62½ per cent.

Plain sheets constituted the heaviest single item of steel exports in December. Japan continues to be the principal buyer of this tonnage, having taken 29,463 tons of the 34,363 tons, or 85.7 per cent; and of the total 1921 exports of sheets of this class, amounting to 193,428 tons, Japan took 127,230 tons, or 65.8 per cent.

Machinery Exports.

	December 1920	December 1921	Calendar Year 1920	Calendar Year 1921
Adding machines.....	\$ 709,160	\$ 115,758	\$ 6,790,407	\$ 2,652,991
Air-compressing machinery.....	661,711	152,262	5,490,397	3,905,084
Brewer's machinery.....	67,630	17,173	822,194	299,023
Cash registers.....	514,278	272,017	5,473,620	2,532,170
Parts of.....	28,921	39,609	469,450	317,133
Concrete mixers.....	152,347	22,502	967,440	581,861
Cotton gins.....	31,180	10,122	433,580	115,463
Cream separators.....	74,106	7,643	1,106,298	414,746
Elevators and elevator machinery.....	172,723	54,632	1,517,537	1,079,504
Electric locomotives.....	18,850	.....	880,430	2,120,712
Gas engines, stationary.....	58,219	48,796	817,925	362,870
Gasoline engines.....	2,903,639	382,122	35,932,682	8,764,198
Kerosene engines.....	.....	66,848	.....	3,894,255
Steam engines.....	5,184,290	2,290,179	57,639,537	35,640,486
All other engines.....	436,585	150,268	4,431,019	2,127,153
Boilers.....	905,390	236,925	8,006,288	4,847,303
Boiler tubes.....	901,975	120,587	6,077,930	3,406,167
All other parts of engines.....	2,041,565	415,561	22,142,104	11,790,506
Excavating machinery.....	182,674	37,907	2,042,727	2,280,591
Milling machinery, flour and grist.....	215,681	69,206	1,886,201	1,612,066
Laundry machinery.....	60,486	32,519	1,136,770	925,219
All other.....	176,278	21,667	903,978	378,745
Lawn mowers.....	96,085	19,597	485,921	446,465
Lathes.....	629,594	120,001	7,575,123	2,977,680
Other machine tools.....	1,264,939	219,708	13,961,243	4,774,294
Sharpening and grinding machines.....	314,293	63,088	3,945,490	1,215,280
All other metal working machinery.....	1,557,881	370,037	18,830,377	10,668,558
Meters, gas and water.....	82,480	75,873	705,037	792,346
Mining machinery, oil well All other.....	1,113,461	393,349	6,229,284	11,306,713
Paper mill machinery.....	1,037,244	349,066	8,990,992	7,563,544
Printing presses.....	394,854	412,583	3,048,667	2,987,657
Pumps and pumping machinery.....	1,092,571	609,174	9,253,711	8,031,245
Refrigerating and ice making machinery.....	2,089,030	398,358	13,684,468	11,966,460
Road making machinery.....	468,711	221,956	3,819,062	1,913,614
Sewing machines.....	143,594	53,878	1,327,752	989,557
Shoe machinery.....	1,447,937	564,193	15,581,843	7,306,074
Sugar mill machinery.....	378,397	112,338	2,653,039	1,797,094
Textile machinery.....	4,054,741	214,981	22,787,977	15,628,253
Typesetting machines.....	2,778,340	1,892,662	20,919,614	20,928,353
Typewriting machines.....	541,696	228,675	4,968,787	3,511,455
Windmills.....	2,392,194	872,061	25,041,809	12,431,397
Wood working machinery saw mill.....	332,366	49,803	2,256,780	1,733,827
All other.....	177,387	9,795	1,220,028	1,020,383
All other machinery and parts of.....	497,789	93,387	3,754,823	2,514,745
Total.....	11,187,597	3,262,221	96,657,680	67,926,066

A considerable portion of this tonnage represents thin gage sheets, some of them No. 31½, and the American mills appear to have a good hold of the Japanese market for these gages, readily accepting the business, despite the difficulty of handling this kind of tonnage. Japan also was the leader in the market for exports in several other lines, which is indicated by the accompanying table setting forth countries of exports for December and for the year.

Welded pipe was exported in 1921 in greater quan-

ties than any other steel product, the outgoing shipments aggregating 345,279 tons, with Mexico as the principal market, the movement to that country being 114,143 tons. Japan, however, was the heaviest buyer in December, taking 4271 tons of the 12,896 tons exported. That country also was the heaviest buyer of

tons, while steel rails ranked next with 22,048 tons. The same relative order prevailed in 1920.

Steam engines were the most important December item of exports under the machinery list, their value being \$2,290,179, while textile machinery, with a value of \$1,892,662, ranked second. Lathe exports in December were valued at \$120,001, and for 1921 at \$2,977,689, and "other machine tools" at \$219,708 and \$4,774,294, respectively.

Imports of Iron and Steel—Gross Tons

	December		Twelve Months End'g December	
	1920	1921	1920	1921
Ferromanganese	5,424	239	59,254	9,057
Ferrosilicon	317	1,160	13,909	7,858
Pig iron	1,861	4,475	123,201	27,601
Scrap	4,132	1,919	140,645	41,469
Bar iron	305	237	4,987	1,913
Structural steel	206	120	1,687	778
Billets, without alloys .....	.....	14	9,299	5,678
All other billets	859	12	16,723	1,310
Steel rails	1,623	894	45,684	22,048
Sheets and plates	98	34	1,792	1,976
Tin and terne plates	55	63	400	454
Wire rods	241	142	5,847	916
Total	18,723	9,309	417,581	121,058
Manganese ore and oxide ..	64,748	14,900	606,937	401,354

tin plate for both December and 1921, taking 5974 tons of the 9170 tons exported in December, and 31,077 tons of the 107,726 exported during the year. Rail exports also found their principal market in Japan in December, shipments of 9650 tons out of a total of 14,943 going to that country. It ranked second for the

Iron and Steel Exports for Five Years

	Gross Tons
*1917	6,227,737
1918	5,338,037
1919	4,386,201
1920	4,820,016
1921	2,213,042

*Record year.

yearly exports of rails, taking 42,239 tons of the total of 322,107, China leading with 45,848 tons.

In only two items did 1921 exports exceed those of 1920: Welded pipe and fittings accounting for 345,279 tons against 284,727 tons in 1920; steel sheets amounting to 193,428 tons against 169,244 tons in 1920. Welded pipe and fittings represented 15.6 per

Exports to Principal Countries of Leading Steel Products, in December and in the Year 1921

Cast Pipe	Year 1921		
	December, 1921 Gross Tons	Gross Tons	Per Cent of Total
Mexico	600	16,889	34.8
Cuba	454	8,427	17.4
Welded Pipe			
Mexico	3,165	114,143	33.1
Japan	4,271	29,017	8.4
United Kingdom	635	14,769	4.3
Argentina	588	12,405	3.6
Steel Rails			
China	76	45,848	14.2
Japan	9,650	42,239	13.1
Canada	2,242	23,032	7.2
Honduras	1,037	12,951	4.0
Galvanized Sheets			
Canada	1,150	20,915	37.4
Philippine Islands	290	5,867	10.5
Plain Sheets			
Japan	29,463	127,230	65.8
Canada	1,888	33,403	17.3
Steel Plates			
Canada	6,331	106,694	31.8
United Kingdom	438	51,784	15.4
Japan	542	31,037	9.2
Structural Steel			
Canada	3,833	59,782	20.1
Japan	835	48,827	16.4
Tin Plate			
Japan	5,974	31,077	28.8
Canada	1,512	24,044	22.3

cent of the 1921 outgo, compared with 5.91 per cent in 1920. Steel sheets were 8.74 per cent of the total in 1921 and 3.51 per cent in 1920.

Pig iron imports for December, amounting to 4475 tons, represented almost half of the total inbound shipments of iron and steel products for the month. Except for scrap, pig iron was the heaviest single item imported for the year 1921 also, the total being 27,601

CENTRIFUGAL CASTING OF PIPE

United States Cast Iron Pipe & Foundry Co. to Use De Lavaud Process

The United States Cast Iron Pipe & Foundry Co. has purchased the exclusive rights for the use of the De Lavaud process for making cast iron pipe centrifugally in the United States and its possessions and in Cuba. This arrangement was recently made with a Toronto, Canada, syndicate at the head of which is Gordon Perry.

A demonstration of one of the De Lavaud machines was recently conducted at the cast iron pipe company's plant at Burlington, N. J., where 6-in. pipe 12 ft. long was produced, one every five minutes. For the company's plant in Birmingham, Ala., a contract has been made for the installation of five De Lavaud machines. These installations will be made as rapidly as possible. The machines will be of such size that 6-in., 8-in., 10-in. and 12-in. pipe can be produced. It is expected that by their use 25 men will be able to turn out 600 lengths of pipe a day with no material necessary except molten iron, whereas under the present system of sand casting it takes approximately 80 men to make 400 lengths of pipe, and there is a considerable molding and core-making cost in labor and materials. In both plants molten iron from cupolas will be used. The practicability of the De Lavaud process has been demonstrated in the operations at Toronto, where various sizes of pipe have been produced by this method for several years.

The installation of the De Lavaud machines by the United States Cast Iron Pipe & Foundry Co. is the first to be made in the United States although, apart from Canada, the process has been in use in Brazil, where it originated, as well as in the Argentine and France for a number of years. Stanton Iron Works of England obtained the rights for the use of this process in Great Britain a year or two ago.

In the early period of the demonstrations of the De Lavaud process in the United States, THE IRON AGE published the first description in its issue of Sept. 7, 1916, and later articles appeared covering the development of the process in Canada and South America.

Dominion Government Pays \$3,000,000

The Dominion Government has overridden the Auditor-General and has paid \$3,000,000 to the Dominion Steel Corporation, in connection with the company's claims for damages for the cancellation of the contract given to the plate mill at Sydney, N. S. Before the recent election, the company, which had entered an action in the Exchequer Court by consent of the Government, offered to settle for \$4,600,000, without proceeding to trial, its claim for \$6,300,000. The Government undertook to pay \$3,000,000 of this and an order-in-council authorizing payment was passed before the election. It was held up by the Auditor-General on the ground that the case was *subjudice*, and also that there was no appropriation from which it could be paid. The Treasury Board, which is a sub-committee of the Cabinet, overruled the Auditor-General a few days ago, and the company has received its cheque, the sum being charged to demobilization. While paying \$3,000,000, the Conservative Government leaves to its successor to say whether or not the balance of \$1,600,000 should be paid.

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The Rate Case in Steel

The iron and steel producers of the country have put before the Interstate Commerce Commission their reasons for asking that the industry be relieved of the heavy handicap of the 40 per cent increase in freight rates that went into effect in August, 1920. The commission was left in no doubt as to the distress in which iron and steel companies have been floundering for many months. Moreover, there can be no suggestion that in a natural desire to make their case strong the iron and steel companies have exaggerated their losses. The figures in respect to important companies are as public as those of railroad earnings, and every new financial statement concerning a steel company differs from its predecessors only in showing that as time passes the losses are greater. The annual meeting of an Ohio company this week showed that on an output of 203,000 tons of steel in 1921 the loss was nearly \$4,000,000, which figures out roundly \$20 to the ton.

In contrast, current railroad profits, approaching 4 per cent on appraised property values, are enviable, and the contrast in the two industries is further emphasized in their outlook. As Chairman Topping put it in his statement at Washington on Saturday, "With railroad operating cost steadily tending downward (November reports show a reduction of 25 per cent), the earning prospects of the railroads are at least encouraging, whereas the iron and steel outlook is the most discouraging that ever confronted us, not only because of the sub-normal demand and prices which now obtain, but because of the impracticability of effecting further cost reductions without railroad co-operation." The process of railroad cost reduction, on the other hand, is but well begun. The changes in shop rules made by the Railroad Labor Board in December will produce savings that have been put at \$80,000,000 per year. And now a decision of the same board, effective Feb. 1, establishing new rules for clerks, freight handlers and station agents will add economies computed at \$50,000,000 per year "under normal traffic conditions."

There will be differences of opinion as to the extent to which the reductions in freight rates asked by the iron and steel industry will increase

the demand for steel. On that score large claims were made by those who appeared before the Interstate Commerce Commission in the hearings of the past week. So complicated is the present situation and so uneven is the adjustment from war conditions in manufacture and merchandising, that the appraisal of effects likely to follow from any single change is exceedingly difficult. It would have been said in advance that so great a drop in cereal and food-product values as has taken place would go far in facilitating readjustments in other values. Distress in any industry is not a good foundation on which to build prosperity in any other. And it is certain that the distress of the farmer is contributing in no small measure to continuing distress in iron and steel manufacture.

The argument made at Washington in behalf of lower iron and steel freight schedules, particularly on raw materials, is certainly not that the railroads should be brought to a state of distress because the steel industry has long been in that state. The argument is that railroad rates, and particularly railroad wages, should not remain on a war basis at the expense of every other industry in the country. Iron and steel manufacturers have a claim which can be urged by no other class of shippers, for there is no parallel in other industries for the hauling, often for long distances, of five tons of raw materials for the making of one ton of finished steel product. Thus on no other class or classes of freight have the railroads any such prospect of participating in the benefits of the increased activity that would be produced by lowering the transportation charge.

In no opinion is there such agreement in the whole business world as in the opinion that freight rate reductions are essential to further progress in the readjustment of prices. Whether these freight reductions are the cause or the effect of reductions in excessive railroad wages is not so important as that they be brought about. The steel industry has been in no haste in arriving at the conclusion which was urged at Washington with such impressive marshaling of the facts. But there has never been greater unanimity throughout the length and breadth of the industry than in the opinion now held that no real turn for the better can be ex-

pected unless a reasonable reduction is made in the charge for transporting its raw materials and its finished products.

Price Basing Points

For several months bars, shapes and plates have sold in Chicago territory at prices which were not the market price at Pittsburgh plus the freight from Pittsburgh to the point of delivery. In other words, the Chicago market in these commodities has not been governed by "Pittsburgh plus." In the past few weeks THE IRON AGE has been quoting the Pittsburgh market on bars, shapes and plates at 1.50c. and the Chicago market at 1.60c. The freight between Pittsburgh and Chicago is 38c. per 100 lb. Sales by Buffalo and various Pennsylvania mills have been made also without definite regard to Pittsburgh basing.

These departures from long standing custom have created scarcely a ripple in a market which has been subject to much vicissitude, though there might have been disturbance had the departures occurred in a strong market. When this matter of "Pittsburgh plus" was first brought to general attention by criticisms of certain western consumers of steel it was argued that abandonment of the system would greatly increase the competition between mills. The argument was perhaps applicable to certain conditions, but the fact should be noted that it is not applicable to present conditions. Abandonment by the Chicago market of the Pittsburgh basis has lessened the number of competitors in that field. Many mills have simply withdrawn from the competition.

Chicago, as already stated, is only one case of departure from Pittsburgh basing. One of particular interest was reported in THE IRON AGE last week, an informal arrangement having been proposed between certain wire mills and their customers in the Cleveland district, whereby wire prices at Cleveland would be higher than prices at Pittsburgh by approximately one-half the freight from Pittsburgh to Cleveland. The arrangement would be much the same as if Cleveland were put on an f.o.b. Youngstown basis.

It is well understood in the trade that while the complaint against "Pittsburgh plus" now being prosecuted by the Federal Trade Commission is directed against the United States Steel Corporation, it was not the Steel Corporation that originated the system, which was more or less common in the steel market for years before the corporation was formed on April 1, 1901. It was not universal before that date, nor has it been universal since. For many years rails have been at the same price f.o.b. mill wherever located, with the exception of Colorado. There was an earlier period, however, when the rail market was regularly \$2 a ton higher at Chicago than at Pittsburgh. An interesting point in that connection is that while it is claimed Pittsburgh is the natural basing point on account of its heavy production, a little over 30 years ago the Chicago district was making more rails than the Pittsburgh district, yet Chicago had the higher price. In wire nails it used to be a common thing for the Chicago market to be at what was called an "arbi-

trary" over the Pittsburgh market, the "arbitrary" being usually 10c. a keg, regardless of the freight rate.

It would be difficult to argue that the existence or non-existence of the "Pittsburgh plus" system of quoting delivered steel prices encourages or retards advances or declines in prices, and it would be quite impossible to prove the case for any one of the various alternatives. The markets would simply be more sensitive, the greater the number of basing points, for the greater the mass the greater the inertia.

Pig iron has shown that it is possible, without injurious disturbance, to have a number of basing points, and also that it is impossible for the differentials between districts to vary widely. Except during the period of Government control of prices in connection with the war there have always been almost as many pig iron markets as producing districts, and prices rose and fell much the same in all the districts. These districts were separated by twilight zones, and when the market in one district advanced or declined the twilight zone would shift, inducing a change in the adjoining district.

American Steel and World Supply

A new low record for recent years in iron and steel output was made in 1921 in the sum total of the five leading countries. All were caught in the reaction from the false prosperity of 1919 and 1920. Germany and France were able to come close to their production of the preceding year. But for the world-wide depression, both probably would have shown a measurable gain. More reliable comparisons are possible than at this time last year, data as to Belgium and Germany not being available then. The 1919 and 1920 figures for Germany are based on information recently secured by our Berlin correspondent, the first that has been made public there since October, 1919, when the printing of monthly production figures was stopped. For the United States and Great Britain the figures given below are close estimates for 1921 and official for other years, while those for France are based on nine months' data statistics for last year and those for Belgium on 10 months' returns. For other years official data are given, corrected to date. Comparisons are made with 1920, 1919 and 1913:

Output of Pig Iron and Steel (Including Castings) in Five Countries, Gross Tons

	1921*	1920	1919	1913
Pig Iron				
United States.	16,750,000	36,925,900	31,015,300	30,972,000
Great Britain.	2,611,400	8,007,900	7,398,000	10,260,000
Germany	5,750,000	5,550,000	5,654,000	16,765,000
France	3,294,000†	3,380,400	2,376,000	5,124,000
Belgium	875,600†	1,112,000	247,200	2,445,600
Total	29,281,000	54,976,200	46,690,500	65,566,600
Steel				
United States.	20,250,000	42,132,900	34,671,200	31,300,800
Great Britain.	3,624,800	9,056,800	7,894,000	7,668,000
Germany	7,750,000	7,710,000	6,732,000	17,340,000
France	2,913,600†	3,002,400	2,148,000	4,620,000
Belgium	804,000†	1,215,600	328,800	2,427,600
Total	35,342,400	63,117,700	51,774,000	63,356,400

*Partly estimated.

†For France based on nine months and for Belgium on 10 months' output.

The countries named probably produced about 90 per cent of the world's steel in 1921. In these columns a year ago a comparison of the 1920 output

with 1919 and 1913 showed the commanding position of the United States, which was credited with about 67 per cent of the total production of both pig iron and steel. Last year the American percentage fell to about 57, a proportion by no means small in the light of a shrinkage of over 50 per cent from the domestic output of 1920. Comparisons as to Great Britain must be made in the light of the coal strike which for three months seriously crippled that country's steel industry. Belgium in 1921 by no means kept up the rate of recovery indicated in 1920.

Total pig iron output in 1921 was only 53 per cent of that for 1920 and 45 per cent of the 1913 total, while steel production in 1921 was only 56 per cent of that for 1920 as well as of that for 1913. Between the pig iron output and that of steel in the five countries last year the difference is about 6,000,000 tons, steel being over 20 per cent greater. In 1920 the margin of over 8,000,000 tons was less than 15 per cent. In 1913, the pig iron total at 65,500,000 tons was more than 2,000,000 tons greater than that of steel. The present day preponderance of steel indicates the growth of the basic open-hearth steel industry with its large use of scrap, and corresponding conservation of the world's iron ore supply.

Railroad Improvements

The railroads have been getting to the point where they can consider the making of improvements as distinguished from extensions—a distinction not always made in popular discussions of the railroad position.

The railroads have not yet had a month of earnings at the rate contemplated by the Transportation act, but they have been making progress in that direction. In the first two months of 1921 there were deficits instead of earnings, but except for a possible retrogression in the last two months of the year the earnings have been progressively less unfavorable. The improvement is ascribed almost wholly to economy, rather than to increase in traffic. Measured by ton-miles of freight moved, traffic decreased in the first four months of the year, April being the low month, and then increased, so that August showed a heavier movement than January. September and October brought further increases, but it is understood the last two months of the year will show some decline.

In the first six months of 1921 the operating ratio of the Class I roads was about 88 per cent, while the next five months averaged about 76 per cent. That is a great improvement, but 76 per cent is still very high by comparison with pre-war ratios.

The general opinion is that railroad conditions are now moving in the right direction, so that the railroads are getting to the point of being able to spend some money beyond what is necessary merely for conducting transportation. Railroad borrowing power is increasing, both because railroad reports are improving and because the money market in general is becoming more favorable.

In some quarters the expression "railroad expenditures" suggests the laying of track and the buying of locomotives and freight cars. It is im-

probable that much of that sort of thing will be done. There are idle locomotives and freight cars and some of them are in bad order. The necessity for increasing the number is not pressing. As to track extensions, there may be some disposition to build short feeder lines, but certainly there will be little laying of strictly new railroad. In this connection the *Railway Age* mentions an interesting point, that already this year the Class I railroads have bought more passenger cars than they did in all of 1921—222 cars against 207. This is not to increase passenger carrying capacity, but to improve service.

A great many improvements are waiting to be made, falling in two general categories—improvements that will decrease the cost of operation and improvements that will increase the carrying capacity of the roads. All the improvements will cost money, and the desirability of their being made will be used continually by the railroads as an argument against reductions in freight rates. One particular improvement does not fall precisely in either of the categories mentioned, the introduction of automatic train stops. The Interstate Commerce Commission is now pressing this subject, and the attitude of the railroads no doubt will be that this would be chiefly a safety measure, although in the long run it would no doubt also both decrease cost of operation and increase capacity. First, the railroads will be called upon to make experiments which will cost money, and the money must be found long in advance of any economy that may ultimately result.

The Yale & Towne Manufacturing Co., Stamford, Conn., made this statement recently in explanation of the company's decision to build a plant in Germany:

Investigation has indicated that the cost of production in Germany is so much lower than in the United States that it is hopeless at this time to compete in many export markets with goods of American manufacture.

There are other evidences of like steps being taken on the strength of the belief that Germany is the cheapest producer, due to cheap labor and cheap money. American moving picture interests are taking advantage of this condition by an increasing use of films "made in Germany." That Germany is at work on a broad scale was given emphasis by the fact that her iron and steel exports late last year exceeded those of any other nation and recently her buying of American copper has been on an unprecedented scale.

Out of 22,409 tons of steel castings produced in Canada last year, 13,984 tons, or 62.4 per cent, was made in electric furnaces. And this was done in a year of depression when the country's total steel output fell to 56,000 tons per month from 92,000 tons per month in 1920. The best record in the production of electric steel castings in the United States was in 1920 when the castings made in electric furnaces were only 12.4 per cent of the total. And the United States leads the world in the use of the electric furnace. Electric power is cheap in Canada and the steel foundry industry is profiting thereby.

SCARCITY IN GERMANY

Fuel Curtailment Restricts Pig Iron Production—
Exports Decrease—May Import
Newfoundland Ore
(Special Correspondence)

BERLIN, GERMANY, Jan. 2.—The German iron and steel market is closely linked with the exchange question. Whether the recent increase in value of the mark represents a turn of the tide depends entirely upon this upward trends continuing for any length of time. The notable improvement in currency which began early in December has thus far directly affected only the scrap market, where prices for best grades have receded from the high point of 3300 m. to about 2100 m., the present quotation.

However, the tendency of the scrap market is no longer indicative of the trend in finished iron and steel, at least not to the extent that it was formerly. Scrap prices are now fluctuating with exchange rates. This may be explained by the fact that fairly large tonnages of old material are stored in France, Belgium, Holland and the United Kingdom, which naturally leads to larger offers to German buyers whenever German prices approach normal. A Dutch firm at Rotterdam has attempted to obtain rolled material from German mills for a British account, offering to exchange scrap stored at Le Havre, France. As a result of the improvement of the mark, German consumers of scrap have purchased stocks from England.

Aside from scrap, there is no distinct change in the tone of the market. The possibility of a readjustment of reparations has introduced an element of uncertainty and buyers are cautious in placing orders. While formerly the mills showed a marked reserve in closing deals, the consumer is now slow to engage in long-term transactions. The demand for lots for current delivery is still active and complaints of inadequate supplies by domestic consumers are as numerous as ever. This feature is more noteworthy when it is considered that export business has lately shown a decrease in volume. With the decline in world's market prices, the increase in value of German currency, the 4 per cent export levy, and the risks incident to the uncertain future of the mark, there is very little inclination among producers to compete in international markets, the more so as a revival in building is expected in the spring. Belgian competition in rails is considered as serious.

Fuel Supplies Curtailed

The coal shortage has led to a cutting of the self-consumption fuel quota for smelting plants. The reduction in supplies amounts to 150,000 tons (100,000 tons of coke and 50,000 tons of coal), and came into operation in January. A feature of the ore market is the offering of Wabana ores by British interests closely connected with the Wabana ore mines in Newfoundland. This ore has been considered as a substitute for Swedish ores provided an agreement is reached on price. The high content of silica is also a deterrent.

Demand for pig iron continues strong and because of the coke shortage can not be met by the furnaces, so that the importation of Czecho-Slovakian pig iron is under consideration. Among recent price advances are Siegerland steel-making iron and 8 to 10 per cent spiegeleisen which have been fixed by the pig iron syndicate at 2964 m. and 3067 m. per ton.

The existence of the pig iron syndicate has been prolonged for five years more and the participation quota system thoroughly revised. The quota for each works heretofore was, with few exceptions, fixed about 10 years ago, and in view of the important changes during and since the war, no longer corresponds to their producing capacities. The new agreement provides that the production figures for each works during a period of six months (minus the tonnage for self-consumption) shall constitute the participation quota for the successive three months. The

possibility of an unlimited development of participation quotas is restricted by a provision retaining the former quotas as maximum figures.

Semi-finished Material Scarce

Semi-finished material is scarcer than pig iron. Mills depending upon outside sources for their supplies are finding it extremely difficult to cover their most urgent requirements. Some grades, such as sheet bars, have almost disappeared from the market and blooms are also difficult to obtain. Many mills are now using ingots for rolling light sheets.

Interest in finished material is chiefly centered on bars and structural shapes. Rail requirements are known to be enormous, but business is restricted because of the financial difficulties of the railroads. Several mills have already granted credits to private railroads. Activity also prevails in the wire market where mills are booked for at least three months ahead. It is safe to assume that 40 per cent of the present output is for export. Drawn wire for export is quoted at £10 to £12, which is but little above the domestic level. The loss in production caused by the recent strike at the Düsseldorf works is severely felt in the tube market. Most of the mills have orders booked into the second quarter of 1922. The tone of the sheet market is easier on the heavier gages, which are more readily obtainable, but supplies of medium and light gages continue scarce.

Prices during the past fortnight do not exhibit any noteworthy changes. The tone of the closing week of the year 1921 was quiet but firm. We quote as follows, per metric ton, unless otherwise stated:

	Marks Per Metric Ton
Bar iron.....	6,800
Structural shapes.....	6,900
Tees and channels.....	6,500
Plats	6,600
Rounds	6,550
Squares	6,500
Angles	8,200
Sheets, heavy.....	6,300
Sheets, medium.....	8,400
Plates, light.....	11,600
Seamless steel tubing, 1 in., per meter.....	19

LAST TWENTY PER CENT

President Clarke Speaks on Importance of Exports to Industries

PITTSBURGH, Jan. 24.—E. A. S. Clarke, president Consolidated Steel Corporation, New York, and Governor H. J. Allen, Kansas, were the principal speakers at the annual banquet of the Engineers Society of Western Pennsylvania at the William Penn Hotel here last evening. Mr. Clarke's subject was "Foreign Trade and Its Relation to This Country." He said that no business was profitable if any substantial element of its production remained unsold. In every line of production, there is an element roughly estimated as the last 20 per cent, the sale of which is essential to the profit of the whole operation. Cost of material and expense of operation come first and it is what is left that makes the profit. Foreign trade of the United States now is in the position of that "last 20 per cent" in relation to our industry as a whole. Mr. Clarke drew attention to the steady growth in exports of manufactures, noting that they have grown from 14.8 per cent of the total in 1880 to 47.2 per cent in 1914, while in the same period exports of raw materials and food-stuffs had dropped from 84.8 per cent of the whole to 52.5 per cent of the total. He reviewed at some length the assistance rendered by the Government through the Department of Commerce, and also told of the help which had come through the War Finance Corporation and the Webb-Pomerene law.

Governor Allen's talk was chiefly about the industrial relations court of Kansas, telling how successful this has been in the adjudication of labor disputes in Kansas. George S. Davison, president Basic Products Co., Pittsburgh, was toastmaster.

Iron and Steel Interests Ask Reductions

Exhaustive Hearing by Interstate Commerce Commission— Witnesses Hold High Freight Rates Responsible for Business Depression

BY L. W. MOFFETT

WASHINGTON, Jan. 24—Unprecedented in its exhaustive detail, iron and steel, foundry, and coal and coke interests representing every important producing section of the country, have completed their testimony before the Interstate Commerce Commission in behalf of substantial reductions in freight rates. Submitted in connection with the commission's general rate investigation, the testimony was begun last Thursday with the opening of the shippers' side in this proceeding, and was concluded yesterday. The first and second days were devoted exclusively to coal and coke rates while the third and fourth days were given over to rates on raw material used in the manufacture of iron and steel, which necessarily included coal and coke, as well as ore and limestone. Testimony was also submitted as to refractories, pig iron and semi-finished and finished steel.

Sitting for the commission were Commissioners Hall (presiding), Lewis, Aitchison and Esch.

Whatever may be the outcome of the investigation, scheduled to close on Feb. 25, it is certain that the iron, steel, foundry, and coal and coke people presented a carefully prepared and voluminous case abounding in facts and figures that could hardly be exceeded for intelligent study. That both the commission and the railroads were impressed is evident. This is not to say that the railroads were swayed from their repeated claims that their financial condition does not warrant general reductions in freight rates; nor is it to say the commissioners were moved to that conviction. But it is a certainty that the facts presented pictured to them most vividly the depressed condition in the iron and steel industries, whose representatives are firmly of the opinion that lower freight rates would stimulate activity for them and be of benefit to every interest in the country, including the carriers. The hope is entertained that the proceedings will result in relief through lower freight rates and some are confidently expectant to this end, with a difference of opinion as to whether it will be through general reductions on all lines or cuts of some character in rates on raw products.

Appeal for Old Rates

Broadly, the iron and steel industry wants the Commission to restore rates prevailing before the so-called 40 per cent general advance which was effective Aug. 26, 1920, in ex parte 74. This was urged by Chairman John A. Topping, of the Republic Iron & Steel Co., as spokesman for the majority of the independent steel makers and by such a prominent United States Steel Corporation representative as L. C. Bihler, traffic manager for the Carnegie Steel Co. F. A. Ogden, general freight agent for the Jones & Laughlin Steel Co., appeared for the same interests as Mr. Topping and supplemented testimony of the latter, making a similar plea as to rate reductions. Their requests related to raw products, pig iron, and semi-finished and finished steel. Iron and steel producers, coal, coke, pig iron and steel and foundry interests, all pointed out that their industries not only have been liquidated but are producing at a loss.

The attitudes of bituminous coal producers were expressed by the first witness for the shippers, J. D. A. Morrow, vice-president of the National Coal Association, who requested a heavy cut in coal rates, and suggested that a reduction of 75c. a ton by April 1, "in all probability would be fully compensated for by the lower fuel costs of the carriers alone, to say

nothing of any other reductions in railroad operating expenses."

The position of the iron and steel makers in the Chicago district as a group, was explained through Robert Hula, assistant traffic manager of the Steel & Tube Co. of America, who urged "maximum relief in rates on coal, if in the judgment of the commission reductions can be made under existing circumstances."

His request for an early decision in order to remove the prevailing uncertainty in the commercial world due partly to the railroad situation, and his assurance that the interests for which he spoke do not want to destroy the transportation system expressed the strain running through most of the testimony. The point was repeatedly made, however, that lower rates would increase both the volume of traffic and net revenues for the railroad.

H. D. Langhorne, speaking for the Virginia Pig Iron Association, in urging reductions in rates on basic commodities, including furnace materials and pig iron, said such action would stimulate the movement of commodities and increase the operating revenues of the railroads. W. A. Barrows, Jr., speaking for the Eastern Pig Iron Manufacturers, said that iron and steel consumers of all classes are waiting for lower freight rates before making any available purchases and urged reductions in rates upon the percentage basis.

Bearing a Great Burden

J. Fred Townsend, traffic manager for the National Tube Co., submitted elaborate tables showing the large increases in rates both inbound and outbound to indicate the heavy burden the steel industry is bearing. When he had finished Commissioner Hall suggested that other witnesses might as well omit declarations and exhibits of that kind because it was obvious that the cumulative effect of the 5, 15, 25, and 40 per cent advances made since 1913, was an increase of a little more than 110 per cent. Figures of that kind, Mr. Hall said, show no more than that the steel industry has suffered in the same way as all other payers of freight rates.

"But the increase on inbound raw materials has been more than 110 per cent," said Mr. Townsend. "On coal it was 150 per cent."

"But that includes increases on intrastate rates," observed Mr. Hall.

Mr. Townsend said that it took eight carloads of raw material to produce one carload of wrought pipe. The increase in the freight bill of the National Tube Co. on inbound material was from \$5,554,820 in 1913 to \$11,316,534 in 1921. On outbound the increase was from \$9,470,652 to \$19,378,455. The increase in the car mile was 112 per cent.

"Was your labor cost in 1920 greater than your total revenue in 1916?" asked Mr. Hall.

"Are you asking about labor cost on railroads?" inquired Charles S. Belsterling, commerce attorney for the United States Steel Corporation, who was conducting the examination of the witness. Mr. Hall said that what he had embodied in his question was the fact with regard to the railroads.

"I'm not prepared to answer that," said the witness.

Speaking not merely for the National Tube Co. but for all engaged in the manufacture of wrought pipe, Mr. Townsend asked for a new set of minimum weights on this. At present its minimum is 46,000 lb., but the average loading is in the neighborhood of

88,000 lb. The industry desired, he said, a minimum of 24,000 lb. at fifth class, 60,000 at sixth, with l.c.l. shipments moving at fourth class. He said that there are a number of articles rated at fifth class that have minima as low as 24,000, hence the suggestion that wrought pipe have a carload rating as low as that. He said that it would give the comparatively small dealer a chance to order in quantities he could handle.

The witness said that the domestic rates on wrought pipe were too high for present conditions, especially to the Pacific coast, where foreign competition has wholly displaced American pipe. The rate figures out \$33.30 per ton. A reduction of 50 per cent, he said, with the average loading would still yield a revenue of \$669.81 per car, or 24c. per car-mile. Foreign pipe, he said, is coming from Germany at \$5.60 per gross ton from Hamburg and \$4.80 from Antwerp. A rate as low as \$3 a ton, he said, had been made recently on other commodities, such as building sand in ships coming from foreign ports to Pacific ports to load with lumber and grain.

Buffalo Causes a Stir

The hearing was enlivened Monday during the examination of James P. Daly, traffic manager of the Donner Steel Co., who appeared on behalf of Buffalo district iron and steel interests, during which he repeated requests made previously by these producers for readjustment of rates on coal and coke to their plants and opposed reduction in rates on iron ore from lower Lake Erie ports to interior furnaces.

Attorney Francis B. James was conducting the examination, when objection was raised to all of the testimony by Attorney Charles S. Belsterling on the ground that the complaints made by Mr. Daly are before the commission or are to come before it in other cases.

Mr. James said the statement of Mr. Daly was intended as an answer to the demands of other iron and steel interests for reductions in ore rates.

Commissioner Hall advised Mr. Belsterling that his objection had been noted, but the testimony would not be struck out for the present. He said, however, that it covered only local matters in a general hearing and could be disposed of under complaints filed.

Mr. Daly, asked by Commissioner Lewis what specific commodities should be reduced in the event no general reductions were made, replied that no single commodities should be selected arbitrarily, but pointed out that if it is found on a sound basis that such action is justified, the first reduction should be made on coal. He assigned as his reason the fact that coal is used in practically all industries and a reduction in rates on this commodity would tend toward the liquidation and stimulation of industries of the country generally. He advocated cuts in ore rates as they relate to the rail movement from the mines to the upper docks, stating that this would benefit all furnace interests, while a cut on ore from lower lake ports would give no benefits to lake front furnaces and stating at the same time that ore rates from lower lake ports now are relatively low.

Cause of Present Depression

"The rates on raw materials entering into the manufacture of iron and steel are much too high and must be reduced," said J. M. Gross, general traffic manager for the Bethlehem Steel Co. "There are yet to be effected many readjustments in the rates on furnace materials and these adjustments should be made before or simultaneously with any general reductions. That the present level of freight rates on raw materials is, to a large extent, responsible for the present conditions in the steel industry is frequently alleged and it is believed can be easily demonstrated. Most industries ship approximately one ton of products for every ton of raw materials. Thus the burden of a horizontal increase in freight charges in the case of such products in proportion to selling price amounts to far less than in the case of a ton of steel. The successive horizontal increases, therefore, have resulted in increases in total freight charges with respect to each ton of steel prod-

ucts which are far out of line with the increases per ton of practically every other commodity and industrial product. These increases in freight charges, of course, are reflected in prices for steel which are entirely out of line with prices for other commodities judged on a pre-war basis."

Charts Submitted

J. L. Roney, general traffic manager for the American Rolling Mill Co., Middletown, Ohio, on Monday, submitted charts in support of the proposal that the 40 per cent advance in the Eastern district should now be eliminated. In addition to that he emphasized the desirability of export rates on iron and steel so as to enable the American mills at all times to market their surplus. Thereby, he said, continuous and economical operation would be assured and labor would always be employed in the mills. He urged the commission to see to it that export rates were always so adjusted.

"Would you rather have a small reduction in rates or an assurance of service?" asked Commissioner Lewis.

"We have service now but no business," answered the witness. "Give us the rate reduction and we'll get the business. If we have the business, we are willing to take chances on obtaining service."

Admitting, in answer to Commissioner Hall's questions that the depression in business is world-wide, Mr. Roney contended that a reduction in rates in the United States would have the effect of improving business.

A. S. Lucas, chairman of the Birmingham District Traffic Managers' Association, spoke Monday afternoon particularly for producers of cast iron pipe and fittings, and said that the present rates are restricting the use of pipe by municipalities because the appropriations they have for installing water pipe are insufficient to pay for the required tonnage and freight rates. He said, as an instance, that Phoenix, Ariz., needed 6000 tons of pipe, but on finding it would cost \$60 per ton, delivered, was able to take only half that amount. Answering questions, Mr. Lucas said he would remove the whole of ex parte 74 "as a starter" and then make other readjustments.

American Foundrymen's Association

Testimony in behalf of the American Foundrymen's Association was given Monday afternoon by its president, W. R. Bean, who asked for the removal of railroad rate increases on inbound shipments of pig iron and outbound shipments of castings of all kinds made in ex parte 74. He told the commission that the association has a membership of 1600 foundry organizations which are of the firm conviction that the increase in the volume of business which will result in the near future from the reductions suggested will place the carriers in a better financial position than will be the case if present rates are maintained.

American Pig Iron Association

Appearing for the American Pig Iron Association, which represents merchant blast furnace interests in the various producing sections of the country, Richard Peters, Jr., urged that the commission restore rates on both inbound raw materials and on outgoing pig iron shipments such as prevailed prior to the general advance of rates on Aug. 26, 1920. His statement was comparatively brief inasmuch as pig iron associations from different groups had already set forth the condition existing in the iron industry, which is charged partly to high freight rates, and he treated the question in a general and broad way. He stated that the high freight rates have localized distribution of pig iron and destroyed the economic system on which the pig iron industry was created. Producers are losing established trade, he said, and it will be difficult to re-establish it. Likewise, he pointed out, consumers find it a financial burden to get the particular mixtures of iron they require which are produced in the different sections of the country according to the requirements.

Lake Superior Iron Ore Association

One exhibit was submitted to the commission Monday afternoon by L. C. Sprague of M. A. Hanna & Co., testifying for the Lake Superior Iron Ore Association,

to show that the rates on iron ore from the mines to upper lake ports are too high and should be reduced. Unsuccessful efforts were made to have the statement of Mr. Sprague struck from the record, but he pointed out that the facts were taken from the records of the Interstate Commerce Commission and not, as charged, from those included in the Adriatic Mining Co. case. He said the purpose of the statement was to show that the advance in rates on iron ore was greater than on other commodities, and that the advance put on the rates from the mines to the docks was intended to cover the increased cost of transportation both in the upper lake region and also from the lower lake ports to furnace points.

Maladjustments Cited

S. L. Meyer, in behalf of the Hammond Iron Works, Warren, Pa., said Monday afternoon that instead of ordering general reductions in rates, the commission would confer a greater benefit on the whole country by removing the present maladjustments and thus enable manufacturers such as the Hammond Iron Works to get back some of the business lost by reason of the increase in the spread of rates from the same point of origin to the manufacturing plants of different fabri-

cators and manufacturers. He said he had in mind the fact that prior to the percentage advances there was a difference in rates to the fabricating plants of the Hammond company and its competitors of 10c. per 100 lb. on steel plates used in fabricating tanks. At present the difference is 16.5c. Under the old adjustment, the complaining producer could absorb the difference in rates and compete on terms that permitted it to obtain a fair share of the business. At present, he said, instead of 20 per cent of the business in the big continent oil fields, the company has only 2 per cent. He said that formal complaint is soon to be filed by the Hammond Iron Works against the existing differentials.

"I do not believe that the Interstate Commerce Commission, under present conditions, could order reductions sufficient to help business without bankrupting the carriers," said H. C. Lust, who also appeared for the Hammond Iron Works. "A 10 per cent reduction would not, I believe, originate an additional pound of steel traffic for the railroads, or an additional ton of coal for them. My idea is that it should devote its attention to ironing out the maladjustments so as to enable all to go back into the markets in which they competed prior to the percentage advances."

Freight Rates Double Those of 1913; Steel Prices Up One-Fourth

Chairman John A. Topping of the Republic Iron & Steel Co., who appeared in behalf of a number of independent manufacturers of iron and steel, stressed the great disproportion between the advance in freight rates since 1913 and the percentage by which existing prices of finished steel exceed the average of steel prices in 1913. The transportation advance is substantially 100 per cent while that of steel is only one-fourth as much. The following is taken from Mr. Topping's statement:

"The independent group of steel manufacturers represent approximately 55 per cent of the steel ingot capacity of the United States, and have an invested capital of approximately \$3,000,000,000. Under normal conditions they employ about 350,000 men, with payroll, based on normal employment at present wages, of approximately \$400,000,000 per annum. Their productive capacity is about 28,000,000 tons of ingots per annum. This capacity, when fully employed, suggests a traffic volume to the railroads of about 168,000,000 tons per annum.

"This large group of iron and steel producers, known as the independents, to distinguish them from the United States Steel Corporation, owns no railroads except such as are required as a plant facility for terminal use, or for connecting railroad purposes, and they are therefore entirely dependent upon the carriers for transportation. It may also be stated that normal railroad traffic depends, to a larger extent upon the prosperity and general activity of this great group of manufacturers than on almost any other interest, because the iron and steel manufacturer furnishes the railroads with six tons of traffic for every one ton of manufactured finished product. That is to say, for every ton of outbound movement five tons of inbound raw material are required for its production; consequently, railroad prosperity greatly depends upon maintaining such conditions for manufacture as will make for fair prices, and unless this is done neither normal demand for iron and steel nor a maximum volume of traffic can be maintained.

The Great Decline in Steel

"Iron and steel prices have fallen out of all proportion to the reduction in cost; consequently, *cost of production for iron and steel must be further reduced, or the selling price of iron and steel must be increased*, a contingency which, if forced, might be disastrous to both the carriers and producing interests.

"The decline in iron and steel prices was emphasized and liquidation hastened by an almost complete col-

lapse in demand. Prices during the year 1921 declined over 50 per cent, while demand at the low point did not exceed 20 per cent. In fact, the iron and steel trade is suffering the worst depression in its history, as average production for 1921 did not exceed 40 per cent, whereas, following the panic of 1907, production was at 70 per cent and after the panic of 1893 averaged about 85 per cent.

"As a consequence of these adverse conditions during 1921, profits were quickly eliminated and losses substituted, while current operations are no less discouraging; in fact, losses became so pronounced that cost reductions were mandatory, and wage reductions of about 46 per cent followed. This reduction, taken in connection with other economies, resulted in cost reductions of about 35 per cent, while iron and steel selling prices, as previously stated, declined about 50 per cent, which decline compares favorably with the unprecedented average decline in farm products of about 56 per cent.

Unfairness of Existing Freight

"We believe that where freight rates bear so large a percentage to the commodity value as freight rates now do to iron and steel costs, freight reductions are essential to a normal consumption of these commodities; in other words, with freight charges representing 50 per cent or more of iron and steel values, normal consumption and movement of these commodities is impossible. Not to emphasize the claims of any particular district, but for purposes of illustration, permit me to point out that on coal, which costs our company about \$2.25 per ton to mine, and is shipped over the B. & L. E. and B. & O. railroads, a distance of 81½ miles, the freight charge is \$1.50 per ton; consequently transportation represents about 75 per cent of the coal cost. On iron ore, where the mine cost runs from \$1 to \$2 per ton, varying with the character of the mine operation, the freight charge, based on an average movement from the Mesabi range of about 77 miles, is \$1 per ton, or approximately 66 2/3 per cent of the average cost of ore. The lower lake rate on ore is no less excessive, as the rate on iron ore for direct shipment from Cleveland to Youngstown, a distance of about 67 miles, is 99½c. per ton. This rate the carriers voluntarily reduced to 74c per ton, effective during the last quarter of 1921, but permission to continue this rate after December, 1920, was denied the carriers, presumably because of this general investigation.

"THE IRON AGE, in commenting upon the relation-

ship of iron and steel prices to freight rates, stated that whereas freight rates have doubled since 1913, the price of seven items of iron and steel, including rails, at Dec. 1, 1921, was \$.0209 per lb., as compared with the 1913 average price of \$.0166 per lb., or an increase of \$.0043 per lb., the equivalent of an increase of 26 per cent, or only one-fourth the percentage of increase made in freight rates.

"Julius Kruttschnitt, chairman of the executive committee of the Southern Pacific Railroad, recently stated that 'freight rates on all railroads declined about 1 per cent between the years 1900 and 1917, and that the total freight rate increase to date was about 74 per cent.' It was also stated by Howard Elliott, chairman of the Northern Pacific Railroad, before this commission, that 'there was practically no inflation in the transportation business during the war.' These statements are not correct so far as they relate to freight rates on coal, coke, limestone, iron ore, iron and steel products, as may be easily ascertained by reference to freight tariffs issued for the Youngstown territory on iron and steel products for the years 1900 to 1917. From these it will be observed that freight rates increased from 3 per cent to 40 per cent, and that the total average increase from 1900 to 1921 on inbound freight was about 90 per cent. For the Birmingham district the increase on inbound raw materials was over 300 per cent. On the other hand, outbound freights on iron and steel in the central traffic territory from 1900 to 1917 increased to principal points about 30 per cent, and from 1900 to 1921 from 122 per cent to 160 per cent.

Burden on Steel Disproportionate

"It may be assumed, perhaps, that the claims made by the gentlemen mentioned had reference to the average of all freight rates being substantially unchanged during the period referred to. But even so, only one conclusion can be reached, viz., that iron and steel products and raw commodities required in their manufacture have carried a disproportionate share of the transportation burden, as compared with other commodities; and, therefore, the unfairness of the increase made on iron and steel commodities under *ex parte* 74 is emphasized. Then again, inasmuch as railroad maintenance of way and equipment represents nearly 20 per cent of the cost for conducting transportation, and as iron and steel enters largely into this item of railroad cost, is it not manifestly to the advantage of the railroads to bring about, in their own interest, lower costs for iron and steel?

"The problem is, can the cost for conducting transportation be reduced sufficiently to put into effect freight rates on bulk commodities like coal, iron ore, iron and steel, sufficiently low to insure a normal movement? The answer is—*Yes, and it should be done.* The problem is largely a labor question, for labor is the big item of cost, as it represents about 60 per cent of the cost of conducting transportation, and yet this item of cost has hardly been touched, the reduction effected amounting to only about 12 per cent, whereas the wages of most other labor (outside of that employed in transportation) have been reduced by 30 per cent to 50 per cent. It is therefore clear that the Railroad Labor Board should not oppose but recommend that the railroad executives should make further wage reductions and adjustments in keeping with competitive rates for labor, otherwise you are exempting railroad labor from the economic consequences of the war by maintaining war wage rates in times of peace, in the face of reductions in the cost of living variously estimated by the Bureau of Labor Statistics at 22 per cent to 37 per cent, depending upon the locality. . . ."

[Mr. Topping again brought out the point developed in his statement before Examiner Howard Hosmer in the iron ore rate hearing at Chicago, Dec. 7, showing how the steel industry had been extended into many new districts because of the growth of the open-hearth process. Thus markets once supplied by the older steel-making districts are no longer open to them. Output of some plants, particularly those solely dependent upon rail transportation, has been curtailed, cheaper

water transportation having helped some of the newer districts.]

Lower Freights Will Increase Steel Consumption

"We are of the opinion that fair readjustments of freight rates will gradually restore normal conditions of demand for iron and steel, and bring about normal traffic conditions. While production has increased during the past twenty years about 320 per cent, and present steel ingot capacity is over 50,000,000 tons, yet the normal consumptive requirements of the country have also grown; in other words, the per capita consumption of steel has increased from 300 lb. in 1900 to 834 lb. in 1920, or about 178 per cent, while the population of the country increased nearly 60 per cent, whereas during this period our exports increased over 300 per cent.

"Normal activity in iron and steel industry, as a whole, means a total traffic volume to the railroads of about 300,000,000 tons per annum, this tonnage representing about 15 per cent of the total annual business of the carriers. Estimating present capacity employed at not to exceed 40 per cent, the present volume of iron and steel traffic does not exceed 120,000,000 tons per annum; but, if the iron and steel business can be brought back to normal, the railroads would benefit to the extent of an increase in traffic of 180,000,000 tons per annum, and this increased traffic volume might more than offset revenue losses through reductions in the commodity rates suggested, because the increased traffic promised consists of the most profitable business handled by the carriers.

Where War Profits of Steel Companies Went

"From the testimony submitted to your commission by Howard Elliott, chairman of the Northern Pacific Railroad Co., it would appear that he, at least, is under the impression that the accumulated 'war profits' of the manufacturing companies were such that the existing freight burdens can be carried indefinitely without hardship.

"No greater mistake could be made by the railroad executives or by others in authority, than to act upon any such assumption, because the average steel earnings during the past six years have not been excessive. I base this statement upon the average earnings realized by three large steel companies during the last six years, after deductions for taxes, depreciation and inventory shrinkage. The net profits of these companies have averaged about 9½ per cent on the combined capital and surplus. If the percentage of profits is calculated upon a fair appraisal value of these properties the rate would be considerably reduced. When the hazards and uncertainties of steel operations are considered, particularly taking into account the necessity for making large expenditures to keep pace with changes and improvements in steel-making processes, the above earnings cannot be considered excessive during the six most prosperous years of the steel trade.

"Large expenditures were also made out of earnings by most all of the steel companies during the war, for patriotic purposes, under conditions of cost which were not far from 300 per cent above normal. A substantial portion of this construction cost must be written off on war account, and the balance must be carried as excess producing capacity, which at present has no useful value. In fact, we feel that with our current losses running into substantial figures, the railroad situation is less desperate than ours, because temporarily, at least, we would be content with railroad current profits, which are about 4 per cent on the appraised property values. Then again, with railroad operating cost steadily tending downward (November reports showing a reduction of 25 per cent), the earning prospects of the railroads are at least encouraging, whereas the iron and steel outlook is the most discouraging that ever confronted us, not only because of the subnormal demand and prices which now maintain, but because of the impracticability of effecting further cost reductions without railroad co-

operation. We must, however, make further reductions in cost or advance our prices, and to increase prices under existing conditions of business would, in our opinion, be exceedingly hazardous to the interests of both the carriers and ourselves.

"We therefore urgently recommend that reductions be made of a substantial character in the freight rates on iron and steel and their related commodities, not only because the rates now in existence are out of all proportion to the value of the products, but principally because existing rates of freight are not justified by the cost of the service, plus a fair railroad profit."

Lower Export Rates Stimulated Business

F. A. Ogden, general freight agent Jones & Laughlin Steel Co., Pittsburgh, also advocated the abolition of the ex parte 74 increase on iron and steel products. He argued that this 40 per cent advance was a factor in bringing about the slump in the steel business, as for eight months prior to the putting in effect of this advance the steel mills were doing a very large business. In 1921, part of the increase in shipments which developed in August and continued through the remaining months of the year was due to the granting of a reduction of 25 per cent in the export rate on iron and steel to Atlantic ports. September, October, November and December all showed increases in exports, the total of the four increases over the August rate being 144,753 tons. Counting six tons of raw material to a ton of steel, the speaker calculated that the lower export freight rate was responsible for the hauling of 144,753 tons more finished steel, and also the hauling of 868,518 tons additional raw materials. Mr. Ogden believed that if proper reductions were made in domestic rates there would be a like or greater increase in domestic shipments. The freight advances of 5, 15, 25 and 40 per cent put in effect since 1914 caused an

increase of 66 per cent on ore rates, 162.5 per cent on coal, 124 per cent on coke and 115 per cent on fluxing stone. The increase in freight costs of assembling raw material for a ton of metal is over \$5. The books of many of the steel companies will show losses for the year 1921. Such operations as the steel companies are maintaining are to hold at least a part of their organizations together, and to help in giving their employees work.

Eliminating the last 40 per cent advance in rates on the raw materials and finished products of the iron and steel industry was also urged by H. C. Crawford, Philadelphia, traffic manager of the Cambria Steel Co., Johnstown, Pa., in his testimony given Saturday. Asked by Commissioner Lewis if, in case it was found the general reductions requested could not be made by the commission, what raw materials he would prefer to see given lower rates and in the order desired, Mr. Crawford named ore, coal, coke and limestone. He said that in naming these he was considering the fact that the Midvale Steel & Ordnance Co., of which the Cambria Steel Co. is one unit, has plants at points other than Johnstown. Mr. Crawford expressed the belief, supported by exhibits, that a comparison of present steel prices with freight rates shows that the latter are greater than the price levels can stand. Roughly, he said, prices of steel to-day are almost the same as those prevailing in 1913. The heavy increases in freight rates on inbound raw materials and outbound finished steel products made since 1913 were shown to the commission, together with the distances of train movements, and earnings per car mile as well as the freight cost of assembling raw materials. As an instance of his elaborate figures, it was shown by Mr. Crawford that the outbound rates had increased from 105 to 184 per cent since 1913. Wages in that year and at present also were quoted.

A Statement for Steel Corporation Subsidiaries

A STATEMENT was made by L. C. Bihler, traffic manager Carnegie Steel Co., on behalf of Carnegie Steel Co., American Steel & Wire Co., American Sheet & Tin Plate Co., American Bridge Co., and Lorain Steel Co., principally located in the so-called eastern territory. Extracts are as follows:

"The transportation costs on necessary ore, coke and limestone, to produce one ton of pig iron have increased, calculating the freight on the ore from the lower Lake Erie ports, and on the fuels and fluxes from customary points of supply in western Pennsylvania and Ohio, from 74 to 107 per cent in the Mahoning and Shenango valleys, Pittsburgh, McKeesport, Donora, Neville Island, Mingo Junction, Bellaire, and Wheeling districts, when comparing 1921 with 1914. This refers only to the three basic commodities used in blast furnaces for the production of a ton of pig iron; on coke the increase in freight rates is as high as 124 per cent, on limestone 250 per cent, and on coal as high as 236 per cent. There are also other items of substantial increases in freight on supplies, etc., which are in addition to the figures cited, and represent further increase in the cost of production of a ton of steel, such as brick, sand, clay, fluorspar, dolomite, ganister, firestone, etc.; coal for fuel under the boilers, gas producers (in fact, over five tons of various materials are required for the manufacture of a ton of finished steel). The advances on these materials range from 87 to 220 per cent.

"Taking a few principal points of destination on outbound manufactured iron and steel and comparing the rates in effect from Pittsburgh and Youngstown, Jan. 1, 1914, with the present rates, shows increases ranging from 117 to 146 per cent; the increase on class rate traffic as a result of 5, 15, 25 and 40 per cent increases, 1921 vs. 1914, is 112 per cent.

"High freight rates have retarded construction and tend to localize the zone into which a steel mill can ship. Office buildings, apartments and dwelling houses (of

the latter of which many are still needed) must be constructed at reasonable cost. As long as costs of building materials are high and unduly high freight rates prevail, high interest on capital invested will continue, and rents will not come down as fast as they should.

"A study shows average car mile earnings of railroads in the Eastern district approximately 35c. per car mile, including general merchandise, for the first nine months of 1921. As against this average car mile earnings on raw materials to and finished products from Pittsburgh district are as follows:

Ore (Line haul only).....	\$0.493
Coal (Average 30-mile radius).....	2.02
Coke	0.88
Limestone	1.25
Pig iron	0.74
Billets	0.73
Rolled products	1.02

And to and from Youngstown, Ohio:

Ore (Line haul only).....	0.67
Coal	0.91
Coke	0.69
Limestone (Hillsville to Youngstown).....	4.09
Pig iron	0.73
Billets	0.76
Rolled products	1.00

"A comparison of rates, average weights and revenue on plates, structural steel and merchant bars, 1913 vs. 1920, show increase in rate 122.2 per cent, and increase in revenue 193.9 per cent on account of greatly increased average weight per car. . . .

"The iron and steel industry has done its full share in liquidation. On the principle of affording the greatest possible assistance in economic reconstruction of industry in the country, and benefiting the largest number of persons, it is well to consider the fact that a restoration of normal production and shipment of iron and steel will almost double the number of people now employed directly in this industry, in addition to which it would afford employment to an increased number of employees in mines, quarries, coke works and other in-

dustries producing raw materials and supplies, as well as additional workmen in steel consuming plants, to say

nothing of additional employment to railroad employees now idle."

Blast Furnace Interests Under Serious Hardships

IRON and steel buyers of all classes are waiting for lower freight rates before making any unavoidable purchases, W. A. Barrows, Jr., of the freight rate committee of the Eastern Pig Iron Association, told the commission Saturday. He added that the interests he represents do not agree with the opinion expressed by President Daniel Willard of the Baltimore & Ohio Railroad. Mr. Barrows said he was speaking for 16 separate iron and steel companies operating 54 blast furnaces near the eastern seaboard of the eastern group territory, with a total inbound movement of approximately 11,000,000 tons annually in normal times.

It was stated that on Jan. 1, 1922, the market price of pig iron was less than the cost of raw materials and their transportation to the blast furnaces, and that the furnaces he represents are in a desperate condition. Mr. Barrows pointed out that, as a typical instance, pig iron was selling for \$20.50 per ton while the total cost of raw material and transportation was \$24.08. A pig iron price to-day based on the relationship between price and transportation cost which prevailed in 1913, Mr. Barrows said, would be \$27.54 per ton, or 34 per cent above the current price. Such a situation, it was declared, could not be met by an increase in the price of pig iron. The market is absorbing now but a small output and foreign iron is coming from Europe. A recent transaction, he said, was the sale of European pig iron at a north Atlantic port at \$18.65 per ton, c.i.f. No stone had been left unturned by Eastern pig iron makers to reduce their costs. He said that while it might be true as contended by George M. Shriver of the Baltimore & Ohio that freight rates in 1921 showed a smaller advance above the rates he used as the base than was shown in commodities, exactly the reverse was the fact with regard to the selling price of pig iron as related to freight rates.

Taking Pottstown, Pa., as a representative point, Mr. Barrows showed the relative increase in the price of pig iron and the price of transportation entering into its manufacture, taking 3.6 tons of inbound raw material, as follows:

	1901	Jan. 1, 1922	Per Cent Increase
Price pig iron per ton....	\$14.68	\$20.50	40
Rail transportation cost...	6.76	11.13	64.5
Total transportation cost..	8.36	13.01	55.6

This was compared with an exhibit of Mr. Shriver as follows:

	1901	1921	Per Cent Increase
All commodities	108	216	100
All freight rates.....	89	152	71

"Thus while the price of all commodities has increased more than all freight rates," said Mr. Barrows, "the price of pig iron has increased much less than the freight charges on the materials involved in its production. A ton of pig iron is less able today to purchase the transportation necessary to its production than in 1901, or in the years intervening."

To indicate the additional tonnage in raw materials to be achieved by any effective stimulation of the industry in the Eastern group, Mr. Barrows quoted some interesting figures. He said that in 1920 the Eastern

pig iron district produced 3,500,000 tons of pig iron, entailing the transportation of 12,600,000 tons of blast furnace raw materials. In 1921 the production was approximately 1,350,000 tons with a furnace materials traffic of 4,860,000 tons.

Situation of Virginia Furnaces

Asserting that the freight rates on raw materials used in making pig iron exceed the market price of the finished product, M. D. Langhorne, superintendent of the Oriskany operations of the Lavino Furnace Co., speaking for the Virginia Pig Iron Association, told the commission that every blast furnace and iron mine in the Old Dominion is closed because they could not operate without losing from \$4 to \$5 on each ton of pig iron produced.

"Pig iron that sold for approximately \$50 per ton at times during the war period is now selling for about \$20, or at pre-war prices," said Mr. Langhorne. "Freight rates have been raised to a point never imagined, amounting, in our case, to an increase of as high as 186 per cent on ore, 128 per cent on stone and from 255 to 309 per cent on coke. The latter figure, we believe, shows a much greater increase than has been made in the same commodity in any other producing section. We find our industry in a position, regardless of the fact that we have reduced labor and other expenses as low as possible and resorted to the use of cheap high grade foreign ores to increase our tonnage and reduce our coke consumption, where we cannot make iron for less than \$25 per ton, losing on every ton produced from \$4 to \$5. This places us in a position even worse than that of any other iron producing section and has resulted in the closing down of every furnace within the State, as well as all of the ore mines and quarries, leaving the entire pig iron industry in a deplorable and chaotic condition and placing a great hardship on the communities dependent on the operation of these plants for a livelihood.

Bad Adjustment of Ore Rates

J. E. Rotthaus, of the Thomas Iron Co., appeared as a witness Saturday with regard to rates on ore. He said that there is a serious maladjustment of these rates and asked for the elimination of ex parte 74 rates. When asked by Commissioner Hall whether he would extend his proposal to all other commodities, Mr. Rotthaus replied affirmatively, although adding that he was speaking only of iron ore. He said that adjustment of rates on ore in that part of the country was so bad that the richest iron mine in the Wharton, N. J., district had been closed and ores from India, Spain, Sweden, Colombia and Cuba are being used. He said that for 74 miles they had a rate on ore of \$2.05, while competing plants at Bethlehem could obtain imported ore by the way of Constable Hook, N. J., at \$1 per ton or from Cornwall mines in Pennsylvania for \$1.10. A properly aligned rate for his company, he stated, would be 93c. Under the ex parte 74 rate of \$2.25 from Buffalo, he said, the railroads hauled 300,000 tons of Lake Superior ore, while under the preceding rate of \$1.54 they hauled 3,500,000 tons.

Maximum Relief on Coal Rates Urged

REPRESENTING iron and steel manufacturers of the Chicago district, including the Wisconsin Steel Co., the Inland Steel Co., the Illinois Steel Co., and the Steel & Tube Co. of America, and also the Milwaukee Coke & Gas Co., maximum relief in rates on coal was urged by Robert Hula, assistant traffic manager of the Steel

& Tube Co. of America, if in the judgment of the commission reductions can be made under existing circumstances. He likewise requested that, in the event a reduction is made in coal rates, the same measure of reduction be made on coal from the various fields to Lake Erie ports for trans-shipment by boats, inasmuch

as some of the Chicago district manufacturers avail themselves of the Lake service. It was pointed out that the necessity for maintaining a relationship to Lake Erie ports with the all-rail rates is self-apparent. Among the exhibits Mr. Hula presented was one containing a statement of rates and revenues on raw materials and finished products and he called attention to rates on coking coal from various coal fields to the Chicago district beginning with Jan. 1, 1914. This showed marked increases in percentages. Other sheets of this exhibit set forth the high average loading and the resulting revenues, the same information on steam and gas coal, which showed even greater percentage increases, the weighted average being 133.7 per cent; rates on coking coal from various coal fields to the present time, and rates on coke from the Connellsville and Pocahontas ovens to the Chicago district, indicating an increase of 84.8 per cent. It was urged by Mr. Hula that the commission render its decision at the earliest date practicable as the present agitation for reduced rates and the uncertain conditions created thereby act as a check upon commerce.

Do Not Wish to Destroy

In opening his statement, Mr. Hula said, that the interests he represents do not wish to destroy the transportation systems of the country, nor to deny them the right of making fair profits, but if conditions allow the commission to make reductions in transportation rates, "We feel that the condition in our industry warrants the careful consideration of the commission, as the steel industry is considered as one of the business barometers of the country and in our judgment is in a worse economic condition than any other industry with perhaps one exception. Annual reports of many steel companies confirm this statement."

To indicate the volume of tonnage in which the companies are interested, Mr. Hula submitted an exhibition showing they have 1586 coke ovens, with an annual coal consuming capacity of 9,694,000 tons and an annual coke producing capacity of 6,750,500 tons. In addition to the coal requirements of these interests at the coke ovens, it was stated that there are large quantities of coal used for steam and gas purposes, aggregating some 3,000,000 or 4,000,000 tons, all of which indicated these steel companies are interested in approximately 14,000,000 tons of coal. Authorities were cited to show that more coal is consumed annually within the Chicago switching district than is consumed in all of the New England states and further that more coal is consumed in the switching district of Chicago than in all of New York State, including Greater New York. He said:

Current figures indicate that production of steel has not exceeded 38 per cent of steel plant capacities during the year 1921, which fairly reflects the present consumption of and demand for iron and steel products.

Prices of iron and steel products have been reduced in many cases below the cost of production and many companies will be unable to maintain these deflated values unless production costs are decreased by lower assembling charges on the basic raw materials, which have not been reduced since the termination of the war.

Decline of Steel Prices

Mr. Hula said that prices on iron and steel products have declined 62 per cent since August, 1917, this being the war peak, and that present prices are from 18.8 per cent to 22.4 per cent higher than the 10-year pre-war average. He also stated that it was shown at the recent Chicago hearing on rates on iron ore in the Lake Superior district that iron and steel prices today are 48.6 per cent above the 1914 level and also that prices of all commodities are on practically the same basis. He added:

Records indicate, that bars, plates and shapes, which are a large percentage of the Chicago manufacturers' output, are today selling at even lower levels than the average for the entire country, * * * in some instances being less than the prices obtaining in 1913. This means that the Chicago manufacturers have been forced to absorb the entire advance in invoices of raw materials, increased freight

thereon, increased cost of labor, taxes and overhead, occurring since 1913.

Freight rates today on raw materials entering into the manufacture of pig iron in the Chicago district are 76.2 per cent above the 1914 level. This was set forth in an exhibit and it was shown that the assembling costs on coal have been increased to a greater extent than the other raw materials.

Compared with Price of Pig Iron

Mr. Hula said that by comparison with the 1914 price on pig iron at Chicago, which was \$13.69 per ton, it is found that the coal assembling charge of \$2.8719 in the same period, was 21.1 per cent of the selling value. On Jan. 3, 1922, he said, the price of pig iron at Chicago was \$19 per ton, while the assembling charge on coal was \$5.1069, or 26.87 per cent of the selling value. To restore the relationship which existed in 1914, it was found that the present assembling charges on coal should be reduced approximately 21.5 per cent. With steel plants operating at 38 per cent of capacity, Mr. Hula said, it is self-apparent that the consumption of coal and coke is proportionately decreased, which naturally reflects upon the tonnage to be hauled by the interested carriers and therefore any action which will tend to stimulate steel plant operation will likewise increase the volume of tonnage to the carriers. He said that it is the belief of the iron and steel industry in the Chicago district that a reduction in the assembling cost on coal will have more effect upon the resumption of the normal operation and consumption through the fact that the industry will be enabled to maintain the deflated prices to the consumer. Mr. Hula submitted a chart compiled from the article "Prices of Iron and Steel and Other Products" appearing in the annual number of THE IRON AGE of Jan. 5, 1922, for the purpose of illustrating the relative price levels in effect today on various representative commodities and also the railroad rate assembling costs on basic raw materials entering into the manufacture of pig iron. This showed steel beams to be the only commodity that had reverted to the 1913 or ante-war basis, with farm products second, in deflated value, being 14 per cent higher than 1913 prices; metal prices third, or 19 per cent higher; finished steel fourth, or 24 per cent higher, and pig iron fifth, or 27 per cent higher. The average for all commodities shown, he said, is today 49 per cent higher than the 1913 base. Projected on the chart was the railroad freight assembling cost on limestone, iron ore, and coal, which at the present time is approximately 78 per cent higher on coal than in 1913.

Strong Appeal for Shippers

Appearing as the first witness for the shippers, J. D. A. Morrow, vice-president of the National Coal Association, representing approximately 2,000 operators producing 60 per cent of the aggregate bituminous output of the country, urged a heavy nation-wide cut in freight rates on coal as a means of lowering the cost of coal to the ultimate consumer and improving the economic position of the nation. He insisted that inflated railroad rates on coal must come down if costs to the ultimate consumer are to be substantially lowered, both in coal itself and in products manufactured from coal. A material reduction in the rates was declared to be necessary to the industrial and business revival of the United States upon which the prosperity of the carriers as well as the nation at large must depend. Although not definitely suggesting what particular cut in freight rates on soft coal the railroads actually ought to make Mr. Morrow said that, through savings to the carriers to-day in cheaper fuel coal alone, as compared with a year ago and making allowance for the saving in freight rates on their own fuel coal, the railroads undoubtedly would be justified in making a reduction of 75 cents a ton. He added:

In the 12 months ended Sept. 30, 1921, the carriers purchased a little over 130,000,000 tons of fuel coal. The reduction in cost under the average for this year reached 90c. per ton in October, 1921. With a further estimated reduction after April 1 next, the total saving to the carriers would approximate \$215,000,000 under the railroad fuel cost for the 12 months ended Sept. 30, 1921.

If this \$215,000,000 saving in railroad fuel cost should be translated into a reduction in freight rates on bituminous coal and allowance made for the saving to the carriers by reduced rates in the freight charges on their own fuel cost, the total saving to the carriers on their fuel coal costs would compensate for an average reduction of 75c. per ton on the bituminous coal rates of the country.

We are not suggesting 75c. as an average reduction which should be made. We are merely pointing out the fact that by April 1, 1922 such a reduction in all probability would be fully compensated for by the lower fuel costs of the carriers alone, to say nothing of any other reductions in railroad operating expenses.

The savings in the cost of bituminous coal to users, from substantial coal rate reductions, would add greatly to the purchasing power of the people. For example, an average reduction of even 60c. per ton on bituminous coal would release nearly \$1,000,000 a day to be spent in other ways.

Charges Declared Excessive

As indicating the excessive freight charge on haulage of coal to-day, Mr. Morrow pointed out, from records of the carriers before the Interstate Commerce Commission, that the average rate per ton is \$2.27, as against an average sales price at the bituminous mines of \$2.13 a ton, or 14c. higher than the cost of the coal. He stated that the freight charge of \$150 or \$200 on a car of coal which can be bought at the mines for from \$50 to \$100 shows on its face the disproportion between the transportation cost and the market value of the commodity. To make plain the relation of the transportation charges to the present high prices of delivered coal, Mr. Morrow stated that 48½ per cent of each dollar paid for coal ordered by the manufacturer goes to the operator, out of which all his costs must come, while 51½ per cent goes to pay the freight on the coal. Mr. Morrow admitted that inflation in wages of the bituminous coal mining industry must be readjusted, but pointed out that wages already have been reduced to the approximate level of November, 1917, throughout the mining fields which are not controlled by the United Mine Workers of America. In some of the union fields also, wages have been reduced to that approximate level, it was declared. In the remaining fields, Mr. Morrow asserted, wages must be reduced on April 1 next.

Statement by George H. Cushing

Rates on coal and coke in effect on April 6, 1917, the day the United States declared war against Germany, were declared by George H. Cushing, managing director of the American Wholesale Coal Association, to have been reasonable. He said that the trend of prices generally warranted a 50 per cent increase over those applicable on the date mentioned while rates 50 per cent over those existing at that time are unreasonable to the extent they exceed the maximum of increase.

Summarized, Mr. Cushing said that the association he represents is of the opinion that:

1. Coal rates are unreasonable to the extent that they exceed 50 per cent over those of April 6, 1917.
2. Export rates are unreasonable to the extent of \$1 per ton.
3. In any readjustment, the differentials, as between producing districts, prevailing April 6, 1917, should be preserved.
4. Reconsignment and demurrage rates of April 6, 1917, were reasonable and should be restored.
5. Demurrage rates are unreasonable to the extent that they exceed \$2 per car per day.

R. H. Hayden, New York, of the National Association of Purchasing Agents, said that the association by referendum vote had favored deflation in high freight rates similar to that in prices on commodities generally. The association, which he says has 4,000 manufacturing and industrial concerns affiliated with it, which consume approximately 100,000,000 tons of coal annually, went on record as being overwhelmingly in favor of reduction in freight rates on basic raw materials, especially coal, but that it does not want any cuts made in rates that would injure the credit of the railroads. The association, said Mr. Hayden, would like to see rates decrease along the line by which they were in-

creased in ex parte 74, so that present differentials would be maintained.

By-Product Coke Plants Suffer Severely

The present high rates on coal and coke have had the effect of preventing by-product coke plants from operating and have restricted development of the by-product coking industry, the commission was told Friday by J. D. Forrest of Indianapolis, who spoke for makers of by-product coke north of the Ohio River, among them some steel interests which sell coke. Some by-product plants, it was stated, have been abandoned owing to high freight rates, and stocks of by-product coke in the country aggregating 1,017,000 tons have accumulated, located as follows: Jersey City, N. J., 280,000 tons; St. Paul, 145,000 tons; Indianapolis, 131,000 tons; Terre Haute, Ind., 71,000 tons; Camden, N. J., 33,000 tons; Detroit, 67,000 tons; St. Louis, 55,000 tons; Kansas City, 50,000 tons; Milwaukee, 75,000 tons; Chicago, 85,000 tons; Geneva, N. Y., 25,000 tons. Mr. Forrest said it was not his purpose to advocate specific coking-in-transit rates but that the principle should be recognized. Francis B. James, representing the Providence Gas Co., included among those for whom Mr. Forrest spoke, said his company took exception to this feature of Mr. Forrest's testimony because it was opposed to the principle of coking-in-transit.

By-product plants, Mr. Forrest said, cannot compete with Connellsville beehive ovens because the former have a double haul—coal to ovens and coke to consumer—which results in pyramiding and increasing freight rates and it was pointed out that it requires 1.25 tons of coal to make one ton of by-product coke.

Mr. Forrest said the carriers recognized the crushing burden that rates had been to by-product coke makers and had made some changes and proposed others but now are awaiting a decision by the commission in the present case before making further adjustments. On cross-examination, Mr. Forrest said that a large portion of the output of the by-product coke plants for which he spoke, went to metallurgical plants, but not all to steel plants themselves. Some by-product ovens, he said, are closed down at steel works which are buying beehive coke because of the wide differential in freight rates against by-product ovens. He read figures to show that these differentials vary from a few cents up to 71 cents per ton.

Examiner in Basing Point Case

WASHINGTON, Jan. 24.—John W. Bennett of the regular trial staff of the Federal Trade Commission, has been assigned as examiner at Pittsburgh base case hearing, beginning in Milwaukee Monday next.

A New England manufacturing company desires through THE IRON AGE to learn where it may obtain several rolled steel welded cylinders of a finished outside diameter of 48 in., a length of 6 ft. and a finished thickness of 5/16 to ¾ in. The stipulation is that the finished cylinder must be sufficiently true not to require very heavy counterweighting to maintain a balance at a speed of 220 r.p.m.

A meeting of industrial power will be held in the Engineering Societies Building, New York, Friday evening, Jan. 27. David B. Rushmore, General Electric Co., will preside and papers will be read by John S. Griggs, Jr., consulting engineer, New York, on "Power in Industrial Plants," and by Harold Goodwin, Jr., consulting engineer, Philadelphia, on "Steam Electric Power for the Industries."

The January meeting of the Tri-City chapter of the American Society for Steel Treating will be held Thursday evening, Jan. 26, at Davenport, Iowa, and will be addressed by the president of the National Society, F. P. Gilligan, on the subject, "Quality First." The motion picture of the United States Bureau of Mines, "Manufacture of Steel for Sheets and Plates," will be presented.

Iron and Steel Markets

WINTER SCHEDULES HOLD

Mills Operate at December Rate—Prices Uncertain

Coal Strike Possibilities — Pittsburgh Basing More and More Eliminated

With the ups and downs of steel works operation in January, shown in a range of 40 to 50 per cent for the Steel Corporation and 25 to 40 per cent for the larger independent companies, the rate of new buying has been little changed. The variations have been chiefly in the rate at which mills have replenished buyers' stocks in the different lines.

It is considered a favorable sign that the mills have kept so well up to the rate of December, with the prospect that the present pace can be held pending the appearance of the so-called seasonal demand of February or early March.

While orders are coming in considerable numbers, the volume is not impressive and uncertainty as to the course of prices is not relieved. On the one hand is the expectation, long disappointed, of lower freight rates; on the other hand, the expected coal strike would mean scarcity and higher prices in coal, coke, pig iron and steel. Thus far precautionary buying is not a measurable factor in any of these lines.

At Chicago larger mill operations are expected when steel specifications on recent and pending car purchases come out. The Gary rail mill will resume operations Jan. 30 with a three months' run in prospect. An Illinois Central order for 20,000 tons of rails and one from the Rock Island for 25,000 tons are about to be placed. Prices on track supplies are weak and proximity of mill is more of a factor in the distribution of business. The Lehigh Valley has contracted for repairs to 800 cars. The Great Northern is in the market for 250,000 tie plates.

Railroad equipment features the export market. The South Manchurian Railroad wants 6000 tons of 100-lb. rails, and mills are meeting keen British competition. For Mexican railroad shops \$300,000 worth of machine tools are under consideration. A car builder has taken an export order for 300 cars.

Not in many months have so many new fabricated steel projects appeared as in the past week. Including 10,000 tons for tank work, 57,000 tons is under negotiation. Awards are also large in comparison with recent weeks, being about 16,000 tons.

In the Central West, with soft steel bar prices irregular, hard steel reinforcing bars have settled to 1.40c. in ordinary transactions.

Hot-rolled strip steel of the wider and heavier sizes that compete with steel bars has sold at 1.85c. and in a few cases lower.

Each week develops more cases of departure

from Pittsburgh basing on finished steel. Equalization of freight rates is a natural development of such competition. In wire nails, while the \$2.50 basis has been maintained by leading producers, the use of barges for transport to Ohio River points has given a lower delivered price. A feature in wire is the appearance of seasonal demand for fencing from some of the Southern States.

As the price of Southern pig iron continues to recede, it becomes an increasingly important factor in the North, particularly in the Chicago market, where sales have been made as low as \$15.50, Birmingham, or 50c. lower than the prevailing quotation. In the Pittsburgh district a resale lot of 1000 tons of basic went at \$17.75, Valley, but the lowest price made by a furnace was \$18, Valley, or 25c. below the recent ruling price. The general tendency of foundry iron is downward, and the demand is light, although some jobbing foundries report an encouraging increase of melt. Many foundries continue to figure on the large tonnage required for the New York-New Jersey vehicular tunnel on which bids will be received Feb. 7.

The Steel Corporation, which has been selling ferromanganese at \$60, Pittsburgh, has raised its price to \$58.35, Atlantic seaboard, which has been the price of importers of the British product.

Pittsburgh

PITTSBURGH, Jan. 24.

The most cheerful report about the steel business here is that it is at least holding its own with last month. In a number of lines, orders are more frequent than they were recently, but individually and in the aggregate, they leave much to be desired. As far as prices are concerned the situation is even more unsettled than it has been and the actual selling basis with the sole exception of black and galvanized sheets is very uncertain, due to the fact that there is so little recognition of the Pittsburgh base on the part of mills located outside the Pittsburgh district.

There is considerable equalization of freights on the part of Pittsburgh makers of wire products in competitive territories and business in the major products in districts having a more favorable freight rate from other centers of production is subject to much the same condition. The market in hot-rolled flats, hoops, bands and strips is very much unsettled because of the competition regular makers of these products have to combat from irregular producers. The regular quotation of 2c., Pittsburgh, on those products is merely a quotation, and business actually has been done at least \$5 per ton lower.

The general average of steel mill operations in this district has not changed much since a week ago. The Jones & Laughlin Steel Co. has put on another blast furnace of its Eliza group in Pittsburgh and is getting ready to put on one at its Woodlawn, Pa., plant. This company now has six of its 12 stacks making iron and its steel works operations are at about the same percentage. The Allegheny Steel Co. maintains operation of three open-hearth furnaces and this week has its tube mill in operation as well as 15 sheet mills. The Pittsburgh Steel Co. has added to its active finishing capacity, but is making no iron or steel. On the other

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Jan. 24, 1922	Jan. 17, 1922	Dec. 27, 1921	Jan. 25, 1921
No. 2X, Philadelphia....	\$21.34	\$21.34	\$21.34	\$32.09
No. 2, Valley furnace....	19.00	19.50	19.50	30.00
No. 2, Southern, Cin'tif....	20.50	20.50	21.50	34.50
No. 2, Birmingham, Ala.†	16.00	16.00	17.00	30.00
No. 2 foundry, Chicago*	19.00	19.00	19.00	31.00
Basic, del'd, eastern Pa....	20.25	20.25	20.25	32.50
Basic, Valley furnace....	18.00	18.25	18.25	30.00
Bessemer, Pittsburgh....	21.46	21.46	21.96	33.96
Malleable, Chicago*	19.00	19.00	19.00	31.56
Malleable, Valley....	19.50	19.50	20.00	32.00
Gray forge, Pittsburgh....	20.96	20.96	20.96	30.96
L. S. charcoal, Chicago....	30.50	31.50	31.50	40.50
Ferromanganese, del'd....	60.00	60.00	60.00	100.00

Rails, Billets, etc., Per Gross Ton:	Jan. 24, 1922	Jan. 17, 1922	Dec. 27, 1921	Jan. 25, 1921
O.-h. rails, heavy, at mill..	\$40.00	\$40.00	\$40.00	\$47.00
Bess. billets, Pittsburgh....	28.00	28.00	29.00	43.50
O.-h. billets, Pittsburgh....	28.00	28.00	29.00	43.50
O.-h. sheet bars, P'gh....	29.00	29.00	30.00	47.00
Forging billets, base, P'gh	32.00	32.00	32.00	48.50
O.-h. billets, Philadelphia..	33.74	33.74	33.74	49.24
Wire rods, Pittsburgh....	36.00	36.00	38.00	57.00
Skelp, gr. steel, P'gh, lb..	1.50	1.50	1.50	2.45
Light rails at mill.....	1.50	1.50	1.55	2.75

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia....	1.81	1.81	1.85	2.70
Iron bars, Chicago.....	1.60	1.60	1.60	2.68
Steel bars, Pittsburgh....	1.50	1.50	1.50	2.35
Steel bars, Chicago.....	1.60	1.60	1.60	2.73
Steel bars, New York....	1.83	1.88	1.88	2.73
Tank plates, Pittsburgh....	1.50	1.50	1.50	2.65
Tank plates, Chicago....	1.60	1.60	1.60	3.03
Tank plates, New York....	1.83	1.83	1.83	3.03
Beams, Pittsburgh.....	1.50	1.50	1.50	2.45
Beams, Chicago.....	1.60	1.60	1.60	2.83
Beams, New York.....	1.83	1.88	1.88	2.83
Steel hoops, Pittsburgh....	1.90	2.00	2.00	3.05

*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Sheets, Nails and Wire,	Jan. 24, 1922	Jan. 17, 1922	Dec. 27, 1921	Jan. 25, 1921
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	3.00	3.00	3.00	4.35
Sheets, galv., No. 28, P'gh	4.00	4.00	4.00	5.70
Sheets, blue an'd, 9 & 10	2.25	2.25	2.25	3.55
Wire nails, Pittsburgh....	2.50	2.50	2.50	3.25
Plain wire, Pittsburgh....	2.25	2.25	2.25	3.25
Barbed wire, galv., P'gh..	3.15	3.15	3.15	4.10
Tin plate, 100-lb. box, P'gh	\$4.75	\$4.75	\$4.75	\$7.00

Old Material, Per Gross Ton:

Carwheels, Chicago.....	\$15.00	\$15.50	\$15.50	\$21.00
Carwheels, Philadelphia..	16.50	16.50	16.50	25.00
Heavy steel scrap, P'gh....	14.00	14.50	14.50	16.00
Heavy steel scrap, Phila..	11.50	11.50	11.50	14.50
Heavy steel scrap, Chicago	11.50	11.50	11.00	15.00
No. 1 cast, Pittsburgh....	16.50	16.50	16.00	25.00
No. 1 cast, Philadelphia..	16.50	16.50	16.50	23.50
No. 1 cast, Ch'go (net ton)	13.00	13.00	12.50	18.00
No. 1 RR. wrot, Phila....	14.50	14.50	14.50	20.00
No. 1 RR. wrot, Ch'go (net)	10.50	10.50	10.25	14.00

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt....	\$2.75	\$2.75	\$2.75	\$5.00
Foundry coke, prompt....	3.75	3.75	3.75	6.00

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York....	13.75	13.87 1/2	13.87 1/2	13.25
Electrolytic copper, refinery	13.50	13.62 1/2	13.62 1/2	12.75
Zinc, St. Louis.....	4.65	4.77 1/2	4.82 1/2	5.40
Zinc, New York.....	5.00	5.12 1/2	5.17 1/2	5.65
Lead, St. Louis.....	4.40	4.40	4.37 1/2	4.80
Lead, New York.....	4.70	4.70	4.70	5.00
Tin (Straits), New York..	31.25	32.00	32.75	32.50
Antimony (Asiatic), N. Y.	4.45	4.45	4.50	5.50

Composite Price, Jan. 24, 1922, Finished Steel, 2.062c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets	Jan. 17, 1922, 2.062c. Dec. 27, 1921, 2.062c. Jan. 25, 1921, 3.057c. 10-year pre-war average, 1.634c.
These products constitute 88 per cent of the United States output of finished steel.	

Composite Price, Jan. 24, 1922, Pig Iron, \$18.39 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham	Jan. 17, 1922, \$18.52 Dec. 27, 1921, 18.68 Jan. 25, 1921, 30.52 10-year pre-war average, 15.72
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hand, there is a slight falling away in the activities of the American Sheet & Tin Plate Co. and no material gain in the operations of the Pittsburgh district plants of the other Steel Corporation subsidiaries.

The pig iron market has been enlivened by a resale of 1000 tons of standard basic iron to a Pittsburgh district sheet maker at \$17.75, Valley furnace. This is a decline of 50c. a ton from the price ruling on the last previous sale and the closing of a few fair sized tonnages also has served to bring to the surface a weaker situation in foundry iron. The heavier grades of scrap are weaker because of a lack of demand and increased anxiety on the part of dealers to secure orders, but on the lighter materials there is enough demand to keep the market extremely firm. The fuel situation shows no particular change.

Pig Iron.—The trade here has been considerably excited by a recent sale of 1000 tons of basic pig iron at \$17.75, Valley furnace, but needlessly so, because the iron moved was a resale tonnage and the price is not yet representative of the real market in this grade. The iron was a portion of a tonnage being held by a furnace interest on the account of a railroad equipment manufacturer and there is some doubt whether any more of the iron is available at that price. The inquiry, however, served to develop the fact that basic

iron from Valley furnaces was not quotable at higher than \$18, as several Valley producers named that figure on the business, or 25c. per ton below what recently had been quoted. No sales have been made at \$18, but the fact that it has been offered at that price serves to establish it as the market quotation. At this price, basic iron is back at the low point of late last summer. The oil well supply company has closed against its recent inquiry for 3000 tons or more of 1.60 to 2 per cent silicon foundry iron, paying \$18.75, Valley furnace for much of the tonnage and \$19 for the remainder. A sanitary ware manufacturer recently bought 1000 tons of foundry iron, paying \$19, Valley furnace for No. 2 grade. The market here no longer is quotable on No. 2 Valley foundry iron at higher than \$19 and if the oil well supply company's purchase is to be regarded as No. 2 iron, the range would be \$18.75 to \$19. We note a sale of 1000 tons of standard Bessemer iron at \$19.50, Valley furnace and the market on this grade appears to be rather firm on that basis.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being \$1.96 per gross ton:

Basic.....	\$18.00
Bessemer.....	19.50
Gray forge.....	19.00
No. 2 foundry.....	19.00
No. 3 foundry.....	\$18.75 to 19.00
Malleable.....	19.50

Ferroalloys.—The market is showing a little more activity in ferromanganese. A Valley steel maker recently closed for a fair sized tonnage on the basis of \$62, Pittsburgh, and we note the sale of 300 tons to a West Virginia steel maker who paid \$61, Pittsburgh, for about 100 tons of 80 per cent material. These sales represent an advance of \$1 to \$2 per ton over the prices recently accepted by the selling interest which, in common with other makers, now is asking \$58.35 Atlantic seaboard, or \$63.67 delivered Pittsburgh common freight point. Current production of ferromanganese by the Carnegie Steel Co. to-day is probably less than the present requirements of the several Steel Corporation subsidiaries which it serves on this material, but it still has a fair sized stock. Other producers and English sales representatives still are quoting \$58.35, Atlantic seaboard, for 80 per cent material, but as yet that price has not prevailed in this district except on small lots. The American Steel Foundries is in the market for 300 tons. The Jones & Laughlin Steel Co. becomes independent of outside sources of supply as a result of the recent purchase of manganese ore and is expected to soon blow in a furnace at its Woodlawn, Pa., plant, for the manufacture of ferromanganese. Efforts to boost the price of 50 per cent ferrosilicon above \$55 furnace, freight allowed, have not been successful, such sales as have recently been made having been at \$54 to \$55. Interest in spiegeleisen in this district is small, but there is a Chicago inquiry for 100 tons before makers. Stocks of this material are light and are mostly of low grade material. Prices are nominal.

We quote 78 to 82 per cent domestic ferromanganese at \$61 to \$63.67 delivered; 78 to 82 per cent foreign ferromanganese, \$58.35, c.l.f. Atlantic seaboard; German, for 76 to 80 per cent, \$54, seaboard. Average 20 per cent spiegeleisen at \$30 to \$32 delivered, Pittsburgh or Valleys; 16 to 19 per cent spiegeleisen, \$28 to \$30 delivered Pittsburgh; 50 per cent ferrosilicon, domestic, \$54 to \$57, freight allowed. Bessemer ferrosilicon is quoted f.o.b. Jackson and New Straitsville, Ohio, furnaces as follows: 10 per cent, \$38.50; 11 per cent, \$41.80; 12 per cent, \$45.10; 13 per cent, \$49.10; 14 per cent, \$54.10; silvery iron, 6 per cent, \$27; 7 per cent, \$28; 8 per cent, \$29.50; 9 per cent, \$31.50; 10 per cent, \$33.50; 11 per cent, \$36; 12 per cent, \$38.50. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is \$4.06 per gross ton.

Billets, Sheet Bars and Slabs.—Specifications on sheet bars are coming along rather well to the Carnegie Steel Co., and some of the other makers also find consumers more willing to take tonnage due them on contracts, but beyond this business shows no appreciable increase. It is said that some users of billets have pretty well reduced their stocks and that any improvement in the demand for finished products is likely to mean larger orders and specifications. This refers particularly to makers of track equipment, but at present those interests are not getting many sizable orders. Reports are current here that rerolling billets recently sold in the Chicago district at \$28, Chicago. Prices here are not very well defined because of a lack of demand, but quotations represent a fair appraisal of to-day's possibilities.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$28 to \$29; 2 x 2 in. billets, \$29 to \$30; Bessemer and open-hearth sheet bars, \$30; slabs, \$29 to \$30; forging billets, ordinary carbons, \$32 to \$33, all f.o.b. Youngstown or Pittsburgh mills.

Wire Rods.—There is a fairly steady demand for small tonnages with prices holding within the recent range of \$36 to \$38, Pittsburgh or Youngstown, depending upon the desirability of the business presented and also as to whether it is for domestic or export account. Lower prices usually prevail on the latter kind of business. Prices are given on page 304.

Steel Skelp.—We note a few fair sized sales of steel pipe skelp at 1.50c. Pittsburgh, and no material advance over this base now seems to be obtainable on boiler tube skelp, although some makers are holding at 1.65c.

Wire Products.—Orders and specifications with all makers in this and nearby districts have been larger in the past week than before in some time, but while the market is fairly satisfactory in this respect, it is not so in the matter of prices, for the reason that sales into competitive territory have to meet the quo-

tation ruling in such districts. It is claimed there is no abandonment of the Pittsburgh base prices of \$2.50 base per keg for nails and \$2.25 base per 100-lb. for plain and annealed wire, but equalization of freight charges is common in practically all big consuming districts, this being tantamount to a price reduction. As far as the Pittsburgh district is concerned, the market still is \$2.50 for nails and \$2.25 for wire.

We quote wire nails at \$2.50 base per keg, Pittsburgh, and bright basic and Bessemer wire at \$2.25 base per 100 lb., Pittsburgh.

Steel Rails.—Specifications for standard rails for February and March delivery lately have been coming along rather well from railroads tributary to Pittsburgh. Interest in light rails remains extremely moderate and on those sections rolled from new steel, sales are impossible at more than 1.50c. base. As a matter of fact, some difficulty is experienced in getting even that price, since rails rolled from old standard sections readily are had at 1.45c. and this price, from mills, having favorable freight rates to point of consumption.

We quote 25 to 45-lb. sections, rolled from new steel, 1.50c. base; rolled from old rails, 1.45c. base; standard rails, \$40 per gross ton mill for Bessemer and open-hearth sections.

Sheets.—Consumers of black and galvanized sheets still are moving with great caution in the matter of purchases and none of the mills seems able to accumulate more than a few weeks' rollings. In spite of this fact, the regular market quotations of 3c. base for black, and 4c. base for galvanized are being strictly observed. It is claimed that there is no money in either grade at less than these prices and there is also the possibility that any deviations from these quotations by independents would be followed by a really steep cut by the Steel Corporation sheet-making subsidiary. The latter reports the past week to have been a rather good one and its operations are understood to be well up to the recent average of 75 per cent. This interest reports some business in the heavier gages of blue annealed sheets at 2.25c. base, but sales of this kind of material on the plate base does not seem to have entirely ceased. Prices are given on page 304.

Tin Plate.—The market is slightly quieter than it has been, due to the fact that specifications are largely in against shipments over the next month or six weeks. Operations of the mills of the American Sheet & Tin Plate Co. reflect the lighter orders, but both this company and the independents are operating at a comparatively high rate for this time of the year. We estimate the current operations of the industry as a whole at around 65 per cent of capacity. Prices do not change much with standard production cokes at \$4.75 per base box Pittsburgh, to carload lot buyers, with the usual concessions to the large consumer.

We quote standard production coke tin plate at \$4.75 per base box f.o.b. Pittsburgh for carload lots.

Cold-Finished Steel Bars and Shafting.—Orders are more frequent for cold-rolled and cold-drawn screw stock and shafting, but the demands chiefly are for rounding out depleted stocks and generally are for small lots. A pretty strong effort is being made to maintain a price of 2c. base Pittsburgh, for carload lots, but the fact that a good sized tonnage sold in the Chicago district a short time ago at 1.75c. base, Pittsburgh, has become pretty well known, and makes it hard for makers to maintain 2c. except for rather small tonnages. A southern Ohio maker is reported to have recently named 1.85c. Pittsburgh on a fair sized tonnage. In a general way the market is quotable at 1.90c. to 2c. on lots of a carload or more. Ground shafting is unchanged at 2.25c. base for carloads, f.o.b. mill.

Hoops and Bands.—Hoops are still quoted at 2c. base, Pittsburgh, by most makers, but the market is weak at that price, as where freight rates are in favor of one mill over another, there is a disposition to equalize them. Under conditions of this sort, business has been done as low as 1.90c. Pittsburgh. On bands 2c. base, Pittsburgh, also is quoted by most makers, but as a basis of sales, that figure is almost out of the question. There are instances where a price

of 1.75c. base, on the hoop and band card, has been authorized but failed to bring the business. A range of from 1.75c. to 1.90c. appears to be a fair appraisal of to-day's price possibilities on bands.

Iron and Steel Bars.—Developments of the past week have fully demonstrated that the market is not quotable at more than 1.50c., Pittsburgh, for merchant steel bars of ordinary analysis. It is possible to buy as little as a carload at this price and then for business within this immediate territory because outside mills are making that price f.o.b. mill, and the delivered price runs considerably under the Pittsburgh price, plus the freight. Demand still is for small lots for early delivery. Iron bars also are moving slowly from local mills, because prices here have not responded to declines in other markets.

We quote steel bars rolled from billets at 1.50c.; reinforcing bars, rolled from billets, 1.50c. base; reinforcing bars, rolled from old rails, 1.35c. to 1.40c.; refined iron bars, 2c. to 2.10c. in carloads, f.o.b. mill, Pittsburgh.

Structural Material.—Structural awards with shops in this district are not at all numerous, and in all instances involve lots of less than 100 tons. Structural inquiries are fairly numerous, but it is too early to say whether they will materialize into active orders in the near future. Most of the shops here have enough orders to maintain a fair rate of operation, but they seem to be well covered on plain material and sales of the latter are small. Sizable lots readily can be placed at 1.50c., Pittsburgh, but 1.60c. is asked on small tonnages. Prices are given on page 304.

Plates.—The past week has developed nothing of interest in this market, demands in all cases being for small tonnages and the mills being so poorly engaged as to tempt operating companies to seek business in other lines. As far as the Pittsburgh district is concerned, the price is 1.50c., base, but in competitive territory this price cannot be obtained.

We quote sheared plates, ½ in. and heavier, tank quality, at 1.50c. f.o.b. Pittsburgh.

Iron and Steel Pipe.—Business is holding its own with last month, but still reflects caution on the part of both the jobbers and users, and no big tonnages are going upon makers' books. Slight concessions from regular prices of steel pipe are appearing, but the market hardly is active enough to develop substantial recessions. Plant operations remain relatively high, but this is partly due to the building up of mill stocks since it is expected that demands during the next few months will be largely for spot tonnages. Discounts are given on page 304.

Boiler Tubes.—Only moderate demands are coming out for steel boiler tubes, and since there is not enough business to give all makers a share, competition between mills is keen and prices still lean in buyers' favor. The mill price generally is the card and 5 per cent extra in carloads, but instances are heard where an additional 2½ to 5 per cent has been offered. In less than carloads, there is a supplementary discount of 5 per cent on the card discounts. Card discounts are given on page 304.

Coke and Coal.—It is impossible to chronicle any material change in the situation either as regards prices or demands. Spot offerings of furnace coke are limited, but no more so than the demand, and while the cool weather has stimulated the demand for coke for heating purposes, it is still possible to buy furnace fuel anywhere from \$2.75 to \$3 per net ton oven. Spot foundry coke is in steady rather than active demand with prices ranging from \$3.75 to \$4.25 per net ton, oven, on direct business, and about 25c. per ton higher on business passing through brokerage hands. The coal market has been enlivened slightly by railroad purchases, but in a general way the possibility of a strike of the coal miners as of April 1 has not yet been reflected in the demand. Non-union steam coal still is available as low as \$1.35 per net ton at mines, for mine run grade, ranging from that up to \$1.50, while non-union by-product grade ranges from \$1.45 to \$1.65 on most of the current business. Gas coal being a product of union districts, is not available at less than \$2, and is selling as high as \$2.35.

Hot-Rolled and Cold-Rolled Strips.—There is uniform observance of a base of 3.50c., Pittsburgh, on cold-rolled strips, although weakness in hot-rolled strips, sales of which have been done well below 2c., is causing some complaint among buyers of the former over the spread between the two kinds. This differential is a matter of at least \$30 a ton, and the claim is made that this is too great. The regular makers of hot-rolled strips are quoting 2c. base Pittsburgh, but find it necessary to shade this price in competition with skelp, plate and blue annealed sheet makers.

Nuts and Bolts.—Makers in this district still complain of a slow and unsatisfactory trade with buyers confining their purchases very closely to actual needs. Makers here are not making new quotations, but usually are following those announced in other centers. Discounts are given on page 304.

Rivets.—Leading makers report no decided betterment either as regards the volume or number of orders coming in. There are reports of rather sharp concessions from quotations on large rivets, notably in the East, and Pittsburgh district makers admit having lost business on quotations of \$2.25 base per 100-lb. for large structural rivets. They are, however, holding to that figure and to the usual premium on boiler rivets. Occasional sales of small rivets are being made at 70, 10, 10 and 5 per cent off list. Prices and discounts are given on page 304.

Spikes.—The market is not showing much life nor are prices especially strong. The most recent sizable sale of standard spikes was at \$2.15 base per 100 lb. Pittsburgh, and this now is representative of the market on large lots. On smaller quantities the going price is \$2.20. Small spikes range from \$3.25 to \$3.30 base per 100-lb. with only a moderate demand. Prices are given on page 304.

Old Material.—Prices show considerable irregularity in the steel works grades with heavy material inclined lower because users are out of the market, but showing an opposite tendency in the lighter material for which there is a rather good demand. Sales of cast iron borings recently have been made in this district at \$12, while fair sized tonnages of machine shop turnings have gone as high as \$10.50 and of compressed sheets at \$12. Meanwhile, the consumptive demand for heavy melting steel and other grades finding the same general use, has dwindled to such a point that the market is at least 50c. per ton lower because of the efforts of dealers to find purchasers. The Jones & Laughlin Steel Co. this week put on an additional blast furnace at its Pittsburgh plant partly because it is able to effect a considerable saving in the cost of making ingots by charging hot metal rather than cold scrap. Takings by Steel Corporation subsidiaries also are smaller than they were recently. Consumers of rerolling rails are not much interested because there is no profit in either rerolled bars or rerolled rails, at current prices, even with old rails at \$15.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate, as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh.....	\$14.00 to \$14.50
No. 1 cast, cupola size.....	16.50 to 17.00
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	15.00 to 15.50
Compressed sheet steel.....	11.75 to 12.00
Bundled sheets, sides and ends.....	10.50 to 11.00
Railroad knuckles and couplers.....	15.00 to 15.50
Railroad coil and leaf springs.....	15.00 to 15.50
Low phosphorus standard bloom and billet ends.....	17.50 to 18.00
Low phosphorus plates and other grades.....	17.00 to 17.50
Railroad malleable.....	12.50 to 13.00
Iron car axles.....	23.00 to 24.00
Locomotive axles, steel.....	21.00 to 22.00
Steel car axles.....	15.00 to 15.50
Cast iron wheels.....	15.00 to 15.50
Roll steel wheels.....	15.00 to 15.50
Machine shop turnings.....	10.00 to 10.50
Sheet bar crop ends.....	14.00 to 14.50
Heavy steel axle turnings.....	11.50 to 12.00
Short shoveling turnings.....	11.00 to 11.25
Heavy breakable cast.....	14.25 to 14.75
Stove plate.....	13.00 to 13.50
Cast iron borings.....	11.50 to 12.00
No. 1 railroad wrought.....	11.50 to 12.00

Chicago

CHICAGO, Jan. 24.

Pending the settlement of the railroad and coal problems as well as difficulties of local scope such as the Chicago building situation, it is felt that caution will continue to actuate the policy of buyers and mill and furnace bookings will not increase materially. Local observers are confident, however, that iron and steel production will not again decline to the low levels of last summer in view of the fact that the large hang-over stocks of 1920 have long since been absorbed. Mere replenishment buying will sustain the present operations of producers and as economic readjustment progresses, the tendency, it is believed, will be toward increased output.

How vital the matter of freight rates is to local producers is illustrated by a recent reduction in export rates from Chicago. Ever since last fall, Pittsburgh mills have enjoyed an export rate of 28c. by rail to New York. With an all-rail export rate of 71c. to the Pacific Coast until recently and latterly a rate of 50c., local mills have had difficulty in competing for Oriental business. Effective Jan. 30, however, a combination rail and river rate of 28c. to New Orleans goes into effect, in anticipation of which a local mill has taken several thousand tons of sheets for Japanese delivery within the past three weeks. Domestic rail rates to the Pacific Coast have not yet been reduced, but a substantial reduction is hoped for in the near future.

Railroad car business continues to be the feature of current market activity. When steel specifications against recent and prospective car orders are booked, improved mill operations are looked for. In the meantime, the general operating situation in this district is on about the same basis as heretofore. The Inland Steel Co. continues to run at 40 to 45 per cent of ingot capacity.

Pig Iron.—The market is quiet, current purchases being confined principally to small lots, ranging from carloads to a few hundred tons. A Chicago district melter has bought 400 tons of foundry for early delivery at \$19, base, local furnace. On the other hand, the Auto Specialties Co., St. Joseph, Mich., has closed for 1000 tons of malleable for second quarter delivery at a reported price which would figure back to \$17.75, base, Chicago furnace. The identity of the seller has not been disclosed and it is possible that the business may have been taken by Detroit or Toledo producers. The freight from Detroit to St. Joseph is \$3.22 as against \$2.94 from Chicago. While reports of shading on local iron are frequent and the market is undeniably weak, it cannot yet be definitely said that the ruling market is below \$19, base, furnace for foundry, malleable and basic. New inquiries of size are few. The Western Electric Co. wants 400 tons of foundry for February shipment and a Terre Haute melter is in the market for 500 tons of malleable for similar delivery. Sellers are of the opinion that the approach of the threatened coal strike will tend to stiffen the market and will drive in considerable business in both pig iron and coke. Southern iron is becoming more of a factor in this district with each reduction in price. A number of carloads have been sold at \$15.50, base, Birmingham, and one producer is now quoting the same price f.o.b. furnace, or the equivalent of \$15.10, Birmingham. Charcoal iron is weaker and at least two producers are now quoting \$27, base, furnace. Buyers of silvery find that the blast furnace product cannot be bought for less than the Jackson County schedule, but electrolytic material is still available at concessions of a dollar or two a ton.

Quotations on Northern foundry, high phosphorus malleable and basic irons are f.o.b. local furnace and do not include a switching charge averaging 70c. per ton. Other prices are for iron delivered at consumers' yards, or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago.....	\$30.50 to \$31.50
Northern coke, No. 1, sil. 2.25 to 2.75.....	19.50
Northern coke, foundry, No. 2, sil. 1.75 to 2.25.....	19.00
Northern high phos.....	19.00
Southern foundry, sil. 1.75 to 2.25.....	22.17 to 22.67
Malleable, not over 2.25 sil.....	19.00
Basic.....	19.00
Low phos., Valley furnace, sil. 1 to 2 per cent copper free.....	33.00
Silvery, sil. 8 per cent.....	\$32.82 to \$4.82

Ferroalloys.—The American Steel Foundries is in the market for 300 tons of 80 per cent ferromanganese. A local steel mill has bought 100 tons of spiegeleisen at \$36.50 delivered. A number of Chicago district buyers have closed for the year's requirements in 50 per cent ferrosilicon at the prevailing market, which ranges from \$56 to \$57.50 delivered.

We quote 78 to 82 per cent ferromanganese, \$66.75, delivered; 50 per cent ferrosilicon, \$56 to \$57.50, delivered; spiegeleisen, 18 to 22 per cent, \$36.50 to \$37, delivered.

Railroad Equipment.—The Central of Georgia has placed 500 box cars with the Mt. Vernon Car Mfg. Co. The Pacific Fruit Express is inquiring for 3300 refrigerator cars. The Chicago Northwestern has ordered 50 passenger service cars from the American Car & Foundry Co., including 20 coaches, 10 smokers, three chair cars, three combination baggage and smokers, nine baggage cars and five baggage and mail cars. The Burlington has put out a formal inquiry for 55 passenger and light freight locomotives.

Rails and Track Supplies.—The Gary mill will resume operation Jan. 30 with about three months' specifications ahead. The Illinois Central and the Rock Island are expected to place orders for 20,000 tons and 25,000 tons respectively in the near future. The Missouri Pacific has placed 500 kegs of standard track spikes with the Illinois Steel Co. and for its Western lines divided 1000 kegs between the Colorado Fuel & Iron Co. and the Kansas City Bolt & Nut Co. Prices on track supplies are weak and the tendency is toward the localization of business. As low as \$37, f.o.b. mill, has been done on tie plates, and 2.10c., Pittsburgh, has been quoted on standard spikes. On track bolts less than 3.15c., Pittsburgh, has been done.

Standard Bessemer and open-hearth rails, \$40; light rails rolled from new steel, 1.60c. to 1.65c. f.o.b. makers' mills.

Standard railroad spikes, 2.15c. to 2.20c., Pittsburgh; track bolts with square nuts, 3.15c. to 3.20c., Pittsburgh; tie plates, steel and iron, 1.85c. to 1.90c., f.o.b. mill; angle bars, 2.40c., f.o.b. mill.

Bars.—Current demand for soft steel bars is principally for car construction and reinforcing work. Jobbers are buying little and automobile, implement and miscellaneous manufacturers are not factors in the market. For the Jones Island sewage disposal station at Milwaukee 5000 tons of reinforcing will soon be let. The Dupont Engineering Co. is low bidder on the general contract and is reported to have submitted a figure which was a quarter of a million dollars below most other bids, which were in the neighborhood of a million dollars each. Bids will be opened today on a general hospital at Madison, Wis., requiring 236 tons, and for the Putnam department store, Davenport, noted in the structural material paragraph, 135 tons of reinforcing will be let. Revised bids have been asked on the First National Bank Building, Albuquerque, New Mexico, which originally called for 265 tons. Figures have also been asked on a hotel building for that city. The municipal power plant at Lansing, Mich., mentioned in the structural material paragraph, will require 115 tons of reinforcing. H. L. Vanderhorst, Kalamazoo, Mich., has the general contract for the Stocking vocational school, Grand Rapids, for which 45 tons of structural steel has been let to the Rochester Bridge Co. and 50 tons of reinforcing is still to be bought. Bids will be asked Jan. 31 on the Roosevelt high school, Des Moines, Iowa, a \$350,000 project. Mill prices on soft steel bars are substantially unchanged, although the tendency appears to be towards weakness. The Northern Pacific is said to have bought about 1000 tons for the manufacture of 5,000,000 large rivets at 1.40c., Chicago, but this report lacks confirmation. Bar iron demand is slowly improving, although individual orders remain small. One mill is now on its sixth week of continuous operation, and another, which had been idle since the first of the year, started up Jan. 17. Hard steel bars are not active.

Mill prices are: Mild steel bars, 1.60c. to 1.70c., Chicago; common bar iron, 1.60c., Chicago; rail carbon, 1.50c., mill or Chicago.

Jobbers quote 2.53c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 3.40c. for rounds and 3.90c. for flats, squares and hexagons. Jobbers quote hard and medium deformed steel bars at 2.38c. base. Hoops and bands, 3.13c.

Wire Products.—The better rate of buying noted last week has been sustained. The bulk of the tonnage booked consists of nails, but there is also encouraging activity in light poultry fence, and barbed wire. Jobbers in the South and Southwest are buying more freely than those in the North and Northwest. Owing to the fact that winter weather has forced a suspension of rip track work, railroad purchases of nails have fallen off sharply. Prices appear to be firm on nails, wire and other finished products. For mill prices, see finished iron and steel f.o.b. Pittsburgh, page 304.

We quote warehouse prices f.o.b. Chicago: No. 9 and heavier black annealed wire, \$3.13 per 100 lb.; No. 9 and heavier bright basic wire, \$3.28 per 100 lb.; common wire \$2.25 per 100 lb.; cement coated nails, \$2.65 per keg.

Sheets.—Domestic business is slack, but further orders have been booked for export, the Inland Steel Co. having taken 3000 tons additional for Japan during the past week. Prices are firm.

Mill quotations are 3c. for No. 28 black, 2.25c. for No. 10 blue annealed and 4c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 38c. per 100 lb.

Jobbers quote: Chicago delivery out of stocks, No. 10 blue annealed, 3.38c.; No. 28 black, 4.15c.; No. 28 galvanized, 4.15c.

Cast Iron Pipe.—Sellers are encouraged by the promising business outlook. The United States Cast Iron Pipe & Foundry Co. was the only bidder on 1353 tons for Chicago and was low bidder on 800 tons for Rockford, Ill. The same company was awarded 400 tons through a contractor for the Centralia, Ill., water company. A private inquiry for 1500 tons at Dayton, Ohio, is still pending. Madison, S. D., takes bids on 600 tons today; Grand Rapids, Mich., on 800 tons, Jan. 28; and Brook Park, Ohio, on 250 tons, Feb. 4. Going prices appear to range from \$32.50 to \$34, Birmingham, for 6-inch and above.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., \$45.60 to \$47.10; 6-in. and above, \$41.60 to \$43.10; class A and gas pipe, \$4 extra.

Bolts and Nuts.—No signs of a revival in buying are to be noted, and no ruling discounts can be named. A number of makers have been quoted f.o.b. factory instead of f.o.b. Pittsburgh, and there appears to be a growing tendency in this direction. It is felt, however, that there will be no general abandonment of the Pittsburgh base until the present case before the Federal Trade Commission has gone to a decision.

Jobbers quote structural rivets, 3.43c.; boiler rivets, 3.53c.; machine bolts up to $\frac{3}{4}$ x 4 in., 60, 10 and 10 per cent off; larger sizes, 60 and 10 off; carriage bolts up to $\frac{3}{4}$ x 6 in., 60 and 10 off; larger sizes, 55 and 5 off; hot pressed nuts, square and hexagon tapped, \$3.75 off; blank nuts, \$4 off; coach or lag screws, gimlet points, square heads, 65 and 5 per cent off. Quantity extras are unchanged.

Structural Material.—The insurgent faction in the local building trades unions is now in control and it seems probable that there will be a fight to a finish between organized labor and the proponents of an open shop. Notwithstanding this development, bids will be taken Jan. 28 on 20,000 tons for the headhouse and concourse of the Chicago Union Station. Mill prices are on about the same footing as heretofore, although in some cases fabricators have been able to place large tonnages at as low as 1.50c., Chicago, which is the price at which carbuilders have been buying their steel.

Recent fabricating awards include:

Masonic Temple, Oklahoma City, Okla., 1635 tons, to J. B. Klein Iron & Foundry Co., that city.

Store building for Leopold Metzger, Minneapolis, 107 tons, to Crown Iron Works, that city.

Municipal and Memorial Building, Ironwood, Mich., 117 tons, to Worden-Allen Co.

Gates, rods and miscellaneous shapes for Chippewa Reservoir dam, Winter, Wis., 150 tons, to Worden-Allen Co.

Tuberculosis hospital, National Soldiers' Home, Milwaukee, structural steel, 133 tons, to C. Hennecke Co., Milwaukee, steel sash, 140 tons, to Robertson & Jackson, Inc., Milwaukee.

Bridge tramway, Cheswick Power Co., Cheswick, Pa., 400 tons, to Heyl & Patterson, Pittsburgh.

Pending business includes:

Municipal power plant, Lansing, Mich., 1470 tons, low bidders on general contract, Dupont Engineering Co. and Walbridge-Aldinger Co.

Jones Island sewage disposal plant, Milwaukee, 450 tons of structural steel and 5000 tons of reinforcing, Dupont Engineering Co., low bidder on general contract.

Putnam Department Store, Davenport, Iowa, 1020 tons, bids to be submitted this week.

Bridge over Missouri River, Booneville, Mo., 4000 tons.

The mill quotation on plain material ranges from 1.60c. to 1.70c., Chicago. Jobbers quote 2.63c. for plain material out of warehouse.

Plates.—Local mills will furnish 70,000 tons of steel for the cars recently placed by the Union Pacific, the Illinois Central and the Central of Georgia. It will be some time, however, before the specifications for this material are prepared. Outside of additional railroad car business on the verge of being placed, there is little plate tonnage in prospect. A number of tank inquiries for the Louisiana and Oklahoma oil fields have been figured on by local fabricators, but there is no certainty that orders will result. Carbuilders continue to buy plates at 1.50c., Chicago, while the general market is from \$2 to \$4 higher.

The ruling mill quotations range from 1.60c. to 1.70c., Chicago. Jobbers quote 2.63c. for plates out of stock.

Old Material.—A large local mill has bought about 10,000 tons of heavy melting at a reported price of \$11.75, and there has also been somewhat better buying by bar iron mills and foundries. Both buyers and sellers believe that present prices are scraping bottom and that the next swing is likely to be upward. Generally speaking, the market cannot yet be termed active and the price situation is substantially unchanged, a few advances being balanced by declines in other commodities. On Jan. 31, the Government will take bids at Chicago on 31,000 gross tons of shells located at Savanna, Ill., Columbus, Ohio, and Toledo. Railroad offerings include the Burlington, 4000 tons; the Sante Fe, 3300 tons, and the New York Central and the Big Four, blank lists.

We quote delivery in consumers' yards Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails.....	\$16.00 to \$16.50
Relaying rails.....	20.00 to 25.00
Cast iron car wheels.....	15.00 to 15.50
Rolled or forged steel car wheels.....	13.00 to 13.50
Steel rails, rerolling.....	12.00 to 12.50
Steel rails, less than 3 ft.....	12.50 to 13.00
Heavy melting steel.....	11.50 to 12.00
Frogs, switches and guards cut apart.....	11.50 to 12.00
Shoveling steel.....	11.00 to 11.50
Low phos. heavy melting steel.....	13.50 to 14.00
Drop forge flashings.....	7.50 to 8.00
Hydraulic compressed sheet.....	7.50 to 8.00
Axle turnings.....	8.50 to 9.00

Per Net Ton	
Iron angles and splice bars.....	14.00 to 14.50
Steel angle bars.....	10.50 to 11.00
Iron arch bars and transoms.....	15.00 to 15.50
Iron car axles.....	19.50 to 20.00
Steel car axles.....	12.50 to 13.00
No. 1 busheling.....	8.25 to 8.75
No. 2 busheling.....	6.00 to 6.50
Cut forge.....	10.00 to 10.50
Pipes and flues.....	6.50 to 7.00
No. 1 railroad wrought.....	10.50 to 11.00
No. 2 railroad wrought.....	10.00 to 10.50
Steel knuckles and couplers.....	11.25 to 11.75
Coil springs.....	12.50 to 13.00
No. 1 machinery cast.....	13.00 to 13.50
No. 1 railroad cast.....	12.50 to 13.00
Low phos. punchings.....	11.00 to 11.50
Locomotive tires, smooth.....	9.50 to 10.00
Machine shop turnings.....	4.50 to 5.00
Cast borings.....	6.00 to 6.50
Stove plate.....	12.00 to 12.50
Grate bars.....	10.50 to 11.00
Brake shoes.....	10.50 to 11.00
Railroad malleable.....	11.25 to 11.75
Agricultural malleable.....	11.25 to 11.75

New York

NEW YORK, Jan. 24.

Pig Iron.—Interest in the pig iron market still continues to center in the bids to be received Feb. 7 on the segments for the New Jersey-New York vehicular tunnel. While many companies are showing an interest and are figuring on how they can bid, prevailing opinion is that only a very few are equipped to make the segments and it is probable that the tonnage will be divided among not more than three or four bidders. The policy of the furnaces has not yet been defined and it does not seem probable that there will be any definite announcement of policy until after the contract for the segments has been awarded. Then the furnaces will figure with successful contractors. Among others interested is an importer of foreign iron, but there seems to be no prospect of any foreign iron going into the tunnel. Prices of English, Belgian and French iron are such that they cannot meet competi-

tion in this country, except possibly on the Pacific Coast. Considerable figuring is being done on export iron to the Far East and it seems to be within the range of possibility that some iron, preferably from the South, can be sold for that shipment. Generally speaking, the market is quiet with some jobbing foundries showing a very comfortable increase in business. The usual asking price of No. 2, plain eastern Pennsylvania iron is \$20, furnace, but buyers claim to be able to buy at \$19.50.

We quote delivered in the New York district as follows, having added to furnace prices \$2.52 freight from eastern Pennsylvania, \$5.46 from Buffalo and \$6.16 from Virginia:

East. Pa. No. 1 fdy., sil. 2.75 to 3.25..	\$23.02 to \$23.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	22.52 to 23.02
East. Pa. No. 2 fdy., sil. 1.75 to 2.25..	22.02 to 22.52
Buffalo, sil. 1.75 to 2.25.....	24.46 to 24.96
No. 2 Virginia, sil. 1.75 to 2.25.....	27.16 to 28.16

Ferroalloys.—Demand for ferromanganese is still light and confined to carload lots for early delivery, sales of the British alloy being noted at \$58.35, seaboard. There is also a little activity in spiegeleisen, light sales having been made at \$26, furnace, for the 20 per cent grade and at \$25, furnace, for the 16 to 19 per cent alloy. The purchase of 20,000 tons of Brazilian high grade manganese ore by a large independent Pittsburgh steel maker at 22c. per unit, seaboard, has created considerable interest in this market and it is reported that a further 10,000 tons has been sold to the same consumer. These sales establish a market for this material, none having been sold in many months heretofore. Quotations for 50 per cent ferrosilicon are unchanged at \$55 to \$60 per ton, delivered, depending on the consuming point and the quantity involved; purchases are confined to small lots, although active negotiations are in progress by leading producers and importers to close contracts for 1922. There is no demand for ferrochrome. Quotations are as follows:

Ferroalloys

Ferromanganese, domestic, delivered, per ton	\$60.00 to \$63.00
Ferromanganese, British, seaboard, per ton	\$58.35
Spiegeleisen, 20 per cent, furnace, per ton..	\$26.00
Ferrosilicon, 50 per cent, delivered, per ton,	\$55.00 to \$60.00
Ferrotungsten, per lb. of contained metal. 40c. to 50c.	
Ferrochromium, 6 to 8 per cent carbon, 60 to 70 per cent Cr., per lb. Cr., delivered... 13c. to 14c.	
Ferrovandium per lb. of contained vanadium	\$4.00

Ores

Manganese ore, foreign, per unit, seaboard. 22c. to 26c.	
Tungsten ore, per unit, in 60 per cent concentrates	\$2.00 up
Chrome ore, 40 to 45 per cent Cr ₂ O ₃ , crude, per net ton, Atlantic seaboard.....	\$20.00 to \$25.00
Chrome ore, 45 to 50 per cent Cr ₂ O ₃ , crude, per net ton, Atlantic seaboard.....	\$25.00 to \$27.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS ₂ , New York.....	50c. to 60c.

Finished Iron and Steel.—Though the local steel market as a whole is very quiet, the past week has brought a marked increase in the number and aggregate tonnage of structural steel projects. Fabricators are figuring on more work than has come their way since 1920. At least 30,000 tons are involved in six new operations in New York City on which bids are now being received. Many of the jobs now up for bids are revivals of undertakings that were figured on before but did not then go ahead. Among the projects being bid on may be mentioned the following:

- Hospital, Elizabeth, N. J., 1000 tons.
 - Office building, Madison Avenue near Thirty-fourth Street, New York, 1000 tons.
 - Office building, Washington, D. C., 1000 tons.
 - Addition to store of R. H. Macy & Co., New York, 8000 tons.
 - Hotel, Syracuse, N. Y., 3500 tons.
 - New York Cotton Exchange building, 3000 tons.
 - Apartment house, Long Island City, 500 tons.
 - Office building at Fifth Avenue and Thirty-sixth Street, New York, 2000 tons.
 - Standard Oil Co. building, New York, 5000 tons.
 - Hospital, Baltimore, 1000 tons.
 - Power plant for Brooklyn Edison Co., 600 tons.
- Building projects for which the steel fabrication awards have been made are as follows:
- Apartment hotel, 2120 Broadway, New York, 900 tons, to A. E. Norton Co.
 - Apartment building at Riverside Drive and 108th Street, New York, 500 tons, to A. E. Norton Co.

Apartment building at Lexington Avenue and Eightieth Street, New York, 500 tons, to A. E. Norton Co.

Apartment hotel at 37 Fifth Avenue, New York, 550 tons, to A. E. Norton Co.

Apartment building at 139 West Seventy-first Street, New York, 450 tons, to A. E. Norton Co.

Two buildings at Johns Hopkins University, Baltimore, 600 tons, to McClintic-Marshall Co.

Oil tanks for Vacuum Oil Co., New York, 1700 tons, to Warren City Boiler Works, Warren, Ohio.

Work for Central Railroad of New Jersey, 150 tons, to Phoenix Bridge Works.

Seventeen 80,000-bbl. oil tanks at Cushing, Okla., for the Sinclair Crude Oil Purchasing Co., 5000 tons of plates, to Phoenix Iron Works Co.

Two buildings in Newark, N. J., 300 in one and 200 in another, to Hay Foundry & Iron Works.

Not much new railroad work is coming to light, but it is expected that cars and locomotives under consideration by the Chicago, Burlington & Quincy Railroad will be placed this week. The freight cars number 7300 and locomotives 55. The Chicago & Northwestern Railroad has placed 45 passenger cars with the American Car & Foundry Co. and the Long Island Railroad has ordered 40 passenger cars from the same company. The Chicago, Burlington & Quincy has ordered 62 passenger cars with the Pullman Co. and 53 baggage cars and mail cars with the Standard Steel Car Co. The American Car & Foundry Co. has booked 300 box cars for export and will require about 300 tons of steel for the work. The Lehigh Valley Railroad has placed an order with the Pressed Steel Car Co. for the repair of 200 freight cars and orders have also been placed for 600 others. The Great Northern is in the market for 250,000 tie plates. Developments in the steel market are few. Prices are weak and 1.45c., Pittsburgh, now thoroughly represents the market on plates, shapes and bars, with some concessions from this level on very desirable business. Tin plate shows weakness whenever a good inquiry makes its appearance, despite the fact that the mills are operating nearly at capacity; it is being sold for domestic shipment fully \$5 a ton below the \$4.75 price, while further concessions have been made for export trade. Sheets appear firm at 2.25c. for blue annealed, 3c. for black and 4c. for galvanized, all base Pittsburgh. Wire nails have been sold down to \$2.40 per 100 lb. keg, Pittsburgh. About 2000 tons of steel bars for a job at Seattle, Wash., will be placed by a Seattle company which obtained the contract. Eastern contractors who were bidding on the work had made inquiry here for the steel.

We quote for mill shipments, New York, as follows: Soft steel bars, 1.83c. to 1.88c.; plates, 1.83c. to 1.88c.; structural shapes, 1.83c. to 1.88c.; bar iron, 1.83c. to 1.88c. On export shipments the freight rate is now 28.5c. per 100 lb., instead of 38c., the domestic rate.

Warehouse Business.—The market continues dull. There is some slight activity in sheets, black and galvanized, but prices are weak, probably caused in part by offers at low prices from over-stocked dealers. While small lots out of warehouse will bring up to as high as 5c. per lb., base for galvanized and 4c. per lb. for black, on any reasonable quantity 4.75c. per lb. and 3.75c. per lb. could be done. The brass and copper market is fairly active and spring purchases are expected to swell considerably the present volume of business. Copper sheets for roofing will probably begin to show more activity by the end of February. Wrought iron and steel pipe warehouses report the usual seasonal dullness. We quote prices on page 320.

High Speed Steel.—The market is similar in every respect to previous weeks. Most producers report a few exceedingly small orders. Quotations on 18 per cent tungsten high speed steel are nominally 85c. to 95c. per lb. with special brands of some companies ranging up to as high as \$1.05 per lb.

Cast-Iron Pipe.—No new municipal lettings are in sight, but despite the dullness natural to this season, orders are reported by one maker, as more numerous than for the same month of last year and his foundry is operating at about 65 per cent of capacity. A general feeling of optimism is reported, based upon construction prospects in the spring. We quote per net

ton, f. o. b., New York, carload lots, as follows: 6-in. and larger \$47.30; 4-in. and 5-in., \$52.30; 3-in., \$62.30, with \$4 additional for Class A and gas pipe.

Old Material.—The market is quiet. Buying prices are slightly lower with some dealers, while others are quoting the same as last week. Specification pipe has been slightly advanced by some brokers. One of these has increased his price twice in the past week. Another is quoting up to \$7.75 per ton as a buying price. Relaying rails would probably bring \$27 to \$28 per ton, although the purchase of a small tonnage by a contractor for use in New York State was reported last week at about \$22 per ton delivered. Stove plate has stiffened slightly and dealers who have had recent transactions state that they have paid as high as \$10.50. Heavy melting steel remains unchanged at \$7.50 to \$8. Short length rails have declined about 50c per ton from last week's quotation, \$8 to \$8.50 per ton now being a fair offering price.

Buying prices per gross ton, New York, follow:

Heavy melting steel, yard.....	\$7.50 to \$8.00
Steel rails, short lengths, or equivalent	8.00 to 8.50
Re-rolling rails.....	9.50 to 10.00
Relaying rails, nominal.....	27.00 to 28.00
Steel car axles.....	10.00 to 10.50
Iron car axles.....	18.50 to 19.00
No. 1 railroad wrought.....	10.00 to 10.50
Wrought iron track.....	8.00 to 8.50
Forge fire.....	5.00 to 5.50
No. 1 yard wrought, long.....	8.50 to 9.00
Cast borings (clean).....	7.50 to 8.00
Machine-shop turnings.....	4.00 to 5.00
Mixed borings and turnings.....	4.00 to 4.50
Iron and steel pipe (1 in. diam. not under 2 ft. long).....	7.25 to 7.75
Stove plate.....	9.50 to 10.50
Locomotive grate bars.....	9.00 to 10.00
Malleable cast (railroad).....	8.00 to 8.50
Car wheels.....	10.50 to 11.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, follow:

No. 1 machinery cast.....	\$16.50 to \$17.00
No. 1 heavy cast (columns, building materials, etc.), cupola size.....	15.50 to 16.00
No. 1 heavy cast, not cupola size.....	14.00 to 14.50
No. 2 cast (radiators, cast boilers, etc.)	10.00 to 10.50

Philadelphia

PHILADELPHIA, Jan. 24.

A slightly perceptible increase in orders for certain steel products has been noted by steel mills in the past week. The heavier products—plates, shapes and bars in particular—have gained little, if any, but the demand for tin plate, sheets and wire products is somewhat better. A new feature is seasonal demand for wire fencing from some of the Southern States. Orders for structural steel have not shown any marked improvement, but a greater number of projects is being figured, and the outlook becomes somewhat more promising. Jobbers are placing more business, but the orders are small. In pig iron the same dullness that has prevailed since the first of the year is still in evidence and January sales in this district will fall considerably below those of December.

Pig Iron.—No change worthy of note has occurred in the pig iron situation. The past week has been quiet, but no more so than the preceding weeks of this year. The most important transaction was the purchase by a radiator manufacturer at Trenton, N. J., of 1200 tons of No. 2 plain iron, the business being divided among three furnaces. Eastern Pennsylvania furnaces have quoted the Saco-Lowell Shops and the Garney Heater Co., both New England interests, on about 2000 tons each of foundry iron, and there are a few other inquiries in the market ranging from 500 to 2000 tons. Some second quarter inquiry has appeared and a few sales have been made for that delivery. About 400 tons of Buffalo No. 2 plain iron was sold to a central Pennsylvania melter for second quarter shipment at \$19, Buffalo. Interest in the 100,000 tons of pig iron required for the New York-New Jersey vehicular tunnel is keen, but some Eastern furnaces have decided not to quote because of the long deliveries. Prices of foundry iron remain fairly steady at \$20 for No. 2 plain, \$20.50 for No. 2X and \$21 for No. 1X, all

f.o.b. furnace. Concessions from these prices are granted where the furnace has a freight rate disadvantage in competition with other furnaces, but such concessions have usually been small. On one transaction a furnace went as low as \$19.50, furnace, for No. 2 plain. A steel company inquiring for basic has been quoted \$19, furnace, by one basic maker, but is trying to buy at a better price.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia, and include freight rates varying from 84 cents to \$1.54 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$20.84 to \$21.26
East. Pa. No. 2X, 2.25 to 2.75 sil....	21.34 to 21.76
Virginia No. 2 plain, 1.75 to 2.25 sil..	27.24 to 27.74
Virginia No. 2X, 2.25 to 2.75 sil....	27.74 to 28.24
Basic delivery eastern Pa.....	20.25
Gray forge	20.50 to 21.50
Malleable	23.00 to 24.00
Standard low phos. (f.o.b. furnace)...	30.00
Copper bearing low phos. (f.o.b. furnace)	28.00

Ferroalloys.—The Steel Corporation, which has been selling ferromanganese at \$60, Pittsburgh, has decided to quote \$58.35, Atlantic seaboard, which is the price quoted by other domestic producers and also by importers of the British alloy. The American Steel Foundries is in the market for 300 tons. There is little demand for spiegeleisen, which is obtainable at about \$25, furnace.

Semi-Finished Steel.—There is some demand for forging billets, but little for re-rolling quality. The former grade is quoted at \$32 to \$33, Pittsburgh, and the latter at \$28 to \$29, Pittsburgh. Sheet bars and slabs are also obtainable at \$28 to \$29, Pittsburgh.

Plates.—Eastern mills are not gaining in plate bookings. Mills which are willing to make price concessions are faring somewhat better than their competitors as to tonnage. On ordinary lots 1.45c. and 1.50c., Pittsburgh, are quoted, some mills adhering quite firmly to the latter quotation. Buyers with attractive orders to place, claim to be able to get quotations equivalent to 1.40c., Pittsburgh, or lower, but there is no confirmation of sales below 1.40c.

Structural Steel.—Fabricators are figuring on more work than has come their way in some time, but little business has been placed in the past week or two. Bids will be requested soon on 3000 tons for the new Philadelphia public library. The Belmont Iron Works will fabricate 900 tons for the Western Union Building at Eleventh and Locust streets. Plain material is being sold at 1.45c. and 1.50c., Pittsburgh.

Bars.—A re-rolling mill is reported to have taken 300 tons of reinforcing bars for the Philadelphia-Camden bridge at a price equivalent to 1.35c., Pittsburgh. Another lot of 300 tons for a fence around a large estate near Philadelphia was sold at 1.40c., Pittsburgh. A Detroit automobile manufacturer is in the market for about 5000 tons of bars for early shipment. Soft steel bars are fairly firm at 1.50c., Pittsburgh, and most of the cutting is on reinforcing quality.

Warehouse Business.—The willingness of the steel mills to book even the smallest tonnages is cutting down the demand for steel out of stock. Local warehouses report no gain in volume of business. Prices for Philadelphia delivery are as follows:

Soft steel bars and small shapes, 2.50c.; iron bars (except bands), 2.50c.; round edge iron, 2.80c.; round edge steel, iron finish, 1½ x ½ in., 2.95c.; round edge steel planished, 3.70c.; tank steel plates, ¼-in. and heavier, 2.75c.; tank steel plates, 3/16-in., 2.925c.; blue annealed steel sheets, No. 10 gage, 3.50c.; light black sheets, No. 28 gage, 4c.; galvanized sheets, No. 28 gage, 5c.; square twisted and deformed steel bars, 2.65c.; structural shapes, 2.60c.; diamond pattern plates, ¼-in., 4.60c.; 3/16-in., 4.785c.; ¼-in., 4.90c.; spring steel, 4.10c.; round cold-rolled steel, 3.25c.; squares and hexagons, cold-rolled steel, 3.75c.; steel hoops, No. 13 gage and lighter, 3.25c.; steel bands, No. 12 gage to 3/16-in., inclusive, 3.10c.; iron bands, 3.90c.; rails, 2.75c.; tool steel, 8c.; Norway iron, 5c.; toe steel, 4.50c.

Sheets.—Prices of sheets show resistance. Apparently there are no concessions being offered by the mills, except that one or two plate mills have been selling annealed tank quality steel sheets as a substitute for blue annealed on the plate basis of 1.50c., Pittsburgh. There has not been enough of such selling, however, to disturb the market seriously. Regular blue annealed makers have little difficulty in getting 2.25c., Pittsburgh, from their established trade. Black

sheets at 3c. and galvanized at 4c., Pittsburgh, are quite firm. Concessions on tin plate appear to have been made, prices as low as \$4.50 per 100 lb. base box being reported.

Wire Products.—A better demand for wire products is noted, particularly fence wire and woven wire fencing, demand for the latter coming principally from the South. Prices are holding except that wire nails are being offered at \$2.40 per keg by makers who use rejected wire rods as their raw material.

Old Material.—Two blast furnaces came into the market last week for borings and turnings, one paying \$9.25, delivered, for 500 tons, and another \$10.25 for a similar quantity. Otherwise there is little demand and prices are stationary. We quote for delivery at consumers' works in this district as follows:

No. 1 heavy melting steel.....	\$11.50 to \$12.00
Scrap rail	11.50 to 12.00
Steel rails, rerolling.....	15.50 to 16.00
No. 1 low phos., heavy 0.04 and under	17.00 to 18.00
Car wheels	16.50 to 17.00
No. 1 railroad wrought.....	14.50 to 15.00
No. 1 yard wrought.....	12.00 to 12.50
No. 1 forge fire.....	10.00 to 10.50
Bundled sheets (for steel works)....	9.50 to 10.00
No. 1 busheling.....	11.00 to 12.00
No. 2 busheling.....	9.00 to 10.00
Turnings (short shoveling grade for blast furnace use).....	9.25 to 10.25
Mixed borings and turnings (for blast furnace use)	9.25 to 10.25
Machine-shop turnings (for rolling mill and steel works use).....	9.00 to 9.50
Heavy axle turnings (or equivalent)	9.50 to 10.00
Cast borings (for steel works and rolling mills)	12.00 to 12.50
Cast borings (for chemical plants)...	13.50 to 14.00
No. 1 cast.....	16.50 to 17.00
Railroad grate bars.....	14.00 to 14.50
Stove plate (for steel plant use)....	14.00 to 14.50
Railroad malleable	13.00 to 14.00
Wrought iron and soft steel pipes and tubes (new specifications).....	11.50 to 12.00
Iron car axles.....	No market
Steel car axles.....	17.00 to 18.00

St. Louis

ST. LOUIS, Jan. 24.

Pig Iron.—Demand for pig iron is confined largely to carloads, the two largest inquiries being for 150 tons each. One of these is from a local melter, the other from a Southern Illinois steam specialty manufacturer. Orders for carloads come from all over the St. Louis trade territory, but the total volume is small. Two furnaces have been taken off by the American Steel Foundries and one furnace has been blown out by the Commonwealth Steel Co. Stove plants in St. Louis have not reopened since the holidays, there is a strike among the Belleville, Ill., plants, and there is little activity among the stove foundries at Quincy, Ill. The market is nominal at \$19, Chicago, and \$16, Birmingham, but lower quotations have been made. On the other hand, one producer reports sales of a few carloads of Northern iron at \$20, Chicago. Several cars of ferromanganese and one car of 50 per cent ferro-silicon were sold.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.88 freight and war tax from Chicago and \$5.91 from Birmingham:

Northern foundry, sil. 1.75 to 2.25.....	\$21.88
Northern malleable, sil. 1.75 to 2.25.....	21.88
Basic	21.88
Southern foundry, sil. 1.75 to 2.25.....	21.91

Finished Iron and Steel.—The Texas & Pacific Railroad, Dallas, Tex., is in the market for 37,000 pairs of 85-lb. angle bars, about 925 tons, and the St. Louis Southwestern wants 2500 pairs of 56-lb. angle bars. The Missouri, Kansas & Texas placed an order for its requirements for six months for locomotive tires, and another St. Louis road has contracted for requirements for a similar period. The Missouri Pacific placed an order for 1000 kegs of track spikes, in addition to 1000 reported in THE IRON AGE last week. The Union Pacific has postponed for several weeks the placing of orders for 25 each of baggage, passenger and observation cars. Demand for wire rods is improving, and the sale is reported of 200 tons to a Kansas City concern. Demand for pipe is fair, but an improvement is indicated in Oklahoma and the Mexia, Tex., fields because of the advance in crude oil, which is expected to increase

drilling operations. The Colorado Fuel & Iron Co. got an order for 300 tons of reinforcing bars for a San Antonio, Tex., job. The building labor situation has been made more complex by the refusal of the Building Trades Council to accept by an overwhelming vote the proposal of the Master Builders' Association for a reduction of 20 per cent in wages.

For stock out of warehouse we quote: Soft steel bars, 2.62½c. per lb.; iron bars, 2.62½c.; structural shapes, 2.72½c.; tank plates, 2.72½c.; No. 10 blue annealed sheets, 3.47½c.; No. 28 black sheets, cold rolled, one pass, 4.15c.; cold drawn rounds, shafting and screw stock, 3.65c.; structural rivets, \$3.52½ per 100 lb.; boiler rivets, \$3.62½; tank rivets, 7/16 in. and smaller, 65 and 5 per cent off list; machine bolts, large, 60-10 per cent; small, 60, 10 and 10 per cent; carriage bolts, large, 55-5 per cent; small, 60 and 10 per cent; lag screws, 65-5 per cent; hot pressed nuts, square or hexagon blank, \$4; and tapped, \$3.75 off list.

Coke.—Inquiry for coke is limited, except in carload lots to furnace grades used by water gas companies. Two lots of 6000 tons each of Granite City by-product were sold and other scattering sales brought the total sales for the week around 12,000 to 14,000 tons for shipment through first half and all of 1922. Foundry coke is inactive, no more than carload sales being made, and no inquiries of note pending. Demand for domestic coke is better because of colder weather in this section.

Old Material.—Buying of heavy melting steel and rolling mill grades is at a standstill. Prices are in some instances weaker. There are no railroad offerings of consequence this week.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Old iron rails.....	\$15.00 to \$15.50
Steel rails, rerolling.....	11.50 to 12.00
Steel rails, less than 3 ft.....	11.50 to 12.00
Relaying rails, standard section.....	23.00 to 28.00
Cast iron car wheels.....	14.00 to 14.50
No. 1 heavy railroad melting steel...	10.50 to 11.00
No. 1 heavy shoveling steel.....	10.00 to 10.50
Ordinary shoveling steel.....	9.00 to 9.50
Frogs, switches and guards cut apart	10.50 to 11.00
Ordinary bundle sheet.....	4.50 to 5.00

Per Net Ton	
Heavy axle and tire turnings.....	5.00 to 5.50
Iron angle bars.....	13.50 to 14.00
Steel angle bars.....	9.00 to 9.50
Iron car axles.....	18.00 to 18.50
Steel car axles.....	13.50 to 14.00
Wrought iron arch bars and transoms	13.00 to 13.50
No. 1 railroad wrought.....	9.50 to 10.00
No. 2 railroad wrought.....	8.50 to 9.00
Railroad springs.....	11.25 to 11.75
Steel couplers and knuckles.....	11.25 to 11.75
Locomotive tires, 42 in. and over, smooth inside.....	8.00 to 8.50
No. 1 dealers' forge.....	7.00 to 7.50
Cast iron borings.....	5.50 to 6.00
No. 1 busheling.....	8.50 to 9.00
No. 1 boilers cut in sheets and rings..	7.00 to 7.50
No. 1 railroad cast.....	13.00 to 13.50
Stove plate and light cast.....	11.50 to 12.00
Railroad malleable.....	9.50 to 10.00
Agricultural malleable.....	9.00 to 9.50
Pipes and flues.....	7.50 to 8.00
Heavy railroad sheet and tank.....	6.00 to 6.50
Light railroad sheet.....	4.50 to 5.00
Railroad grate bars.....	9.50 to 10.00
Machine shop turnings.....	4.50 to 5.00
Country mixed iron.....	6.50 to 7.00
Uncut railroad mixed.....	7.00 to 7.50
Horseshoes	9.50 to 10.00
Railroad brake shoes.....	9.00 to 9.50

Boston

BOSTON, Jan. 24.

Pig Iron.—New England foundries have continued a policy of buying pig iron only as needed. They have not been convinced it is time to anticipate requirements, first, because the average daily melt shows little appreciable increase, and second, because no concerted movement has been made by eastern Pennsylvania and Buffalo furnace interests to hold prices. Buying the past week has been of a hand-to-mouth character or for mixture purposes. The immediate future is more promising, however. A manufacturer of textile machinery may close shortly on 500 tons to 1000 tons each of No. 1X and No. 2X for immediate delivery; the Gurney Heater Co., Framingham, Mass., on 1000 tons No. 2 plain or more, second quarter delivery; a Connecticut foundry on 500 tons No. 2X, delivery extending over next three months; Massachusetts stove interests on varying tonnages, which in the aggregate make a good showing; and there are several smaller inquiries. Other prospective tonnages are in

the making, for supplies are close to nothing, notwithstanding small weekly melts. Most Connecticut foundries have small stocks because some time back they made a price settlement rather than take high-priced iron. Firmer prices on special analysis iron are noted. A special low phosphorus malleable sold this week at \$23, furnace; high manganese Buffalo at \$20, furnace, and off malleable at better than \$19, furnace. Eastern Pennsylvania No. 2X apparently is obtainable at \$19.50 furnace. One of the most active Buffalo furnaces refuses to meet that price, turning down 500 tons. Numerous small quantities of Alabama iron were placed in Massachusetts and Connecticut this week at \$16 and \$16.50, furnace base. Little was done in Virginia iron. Delivered prices follow:

We quote delivered at common New England points as follows, having added to furnace prices \$4.06 freight from eastern Pennsylvania, \$5.46 from Buffalo, \$6.58 from Virginia and \$10.66 from Alabama:

East. Penn., silicon 2.25 to 2.75.....	\$24.06 to \$25.06
East. Penn., silicon 1.75 to 2.25.....	23.56 to 24.56
Buffalo, silicon 2.25 to 2.75.....	24.46 to 25.96
Buffalo, silicon 1.75 to 2.25.....	24.46 to 25.46
Virginia, silicon 2.25 to 2.75.....	29.08 to 29.58
Virginia, silicon 1.75 to 2.25.....	28.58 to 29.08
Alabama, silicon 2.25 to 2.75.....	27.16 to 27.66
Alabama, silicon 1.75 to 2.25.....	26.66 to 27.16

Finished Material.—Mill representatives report little business this week, and prices as barely steady. The fact that bar business recently was placed at 1.45c., Pittsburgh, and the Maine Central has bought small tonnages of plates at less than 1.50c., have had an unsettling influence on trade. The one bright spot is the structural steel market. No large tonnages were placed this week, but will be shortly, and further sizable business is in the making. Warehouses in some instances shortly will be obliged to place business but the volume involved is problematical. Their business is improving, although slowly. With the exception of a reduction of 50c. a keg on rivets, and a spread of \$3.50 to \$3.75 in wire nails, the local warehouse price situation shows little change.

Jobbers now quote: Soft steel bars, \$2.55½ per 100 lb. base; flats, \$3.05½; concrete bars, stock lengths, \$2.55½; structural angles and beams, \$2.65½; plates, \$2.65½ to \$2.83; tire steel, \$3.85 to \$4.25; open hearth spring steel, \$4.50; crucible spring steel, \$11.50; bands, \$3.15½ to \$3.53; hoop steel, \$3.15½; cold rolled steel, \$3.55 to \$4.05; toe calk steel, \$8; refined iron, \$2.55½ per 100 lb. base; best refined iron, \$4.25; Wayne iron, \$5.50; Norway iron, \$5.50; No. 10 blue annealed sheets, \$3.48 per 100 lb. base; No. 28 black sheets, \$4.50; No. 28 galvanized sheets, \$5.50.

Coke.—One order for 1000 tons of by-product foundry coke was placed by a Massachusetts foundry this week. Business otherwise was confined to small tonnages of spot and to releases of small tonnages on contract, the latter predominating. Both the New England Coal & Coke Co. and the Providence Gas Co. quote foundry coke at \$10.40, delivered, where the local freight does not exceed \$3.40, but the undertone of the market is reported as firmer. The firmness is based more on an anticipated curtailment of the Connellsville output rather than on prospects of a greater demand in New England within the immediate future. The statistical position of coke in New England foundry yards is such that any interruption in transportation, due to snow or ice, undoubtedly would place pig iron melters in an uncomfortable position.

Old Material.—On those old materials for which any demand exists, prices are firmer. Business the past week, however, was largely between dealers. Comparatively small tonnages are going into consumption. The Crompton & Knowles Loom Works, Worcester, Mass., inquiry on 1000 tons No. 1 machinery has strengthened the market. That is, the inside price seldom is quoted lower than \$18 delivered, whereas a week ago less could be done. Car lots have been sold this week at \$18 to \$18.50, delivered, and in one instance at \$18.80. A high freight rate was involved in the latter transaction. There is no market for stove plate or railroad malleable. New England and New York melters have bought horseshoes this week in carload lots, for which the dealer paid \$13.50. Heavy melting steel is firmer on buying by Worcester, Mass., interests. Little inquiry comes from Pennsylvania mills for steel. Borings continue in demand and are firmer because of their scarcity. A local dealer this

week paid \$5.20 for skeleton, but that price is exceptional.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast.....	\$18.00 to \$18.50
No. 2 machinery cast.....	16.00 to 16.50
Stove plate.....	15.00
Railroad malleable.....	13.00 to 13.50

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$8.00 to \$9.00
No. 1 railroad wrought.....	10.50 to 11.00
No. 1 yard wrought.....	9.50 to 10.00
Wrought pipe (1-in. in diam., over 2 ft. long).....	7.00 to 7.25
Machine shop turnings.....	3.25 to 3.50
Cast iron borings, rolling mill.....	7.25 to 7.50
Cast iron borings, chemical.....	8.00 to 8.25
Blast furnace borings and turnings.....	3.50 to 3.75
Forged scrap and bundled skeleton.....	4.50 to 5.00
Street car axles and shafting.....	10.50 to 11.00
Car wheels.....	11.50 to 12.00
Rerolling rails.....	10.00 to 10.50

Buffalo

BUFFALO, Jan. 24.

Pig Iron.—Further evidences of a weakening in the market is furnished by the statement of two furnaces that \$19.50 is acceptable on any order. Hitherto they have held firm at \$20 base, but falling off in sales in two weeks have been so marked that to meet competition, the reduction is extended to tonnages of all sizes. Of the five producers here, all are interested in the New York vehicular tunnel with the exception of one. There is no disposition on the part of any interest, however, to quote beyond second quarter delivery. Some of the foundries interested in the tunnel proposition ask for bids on the basis of 100,000 tons. Total sales are about 5000 tons. Inquiry is scattered, including one for 1000 tons of No. 2 X and another of the same grade for 600 tons. Inquiry from outside the district is not as brisk as a month ago when foundries generally felt Buffalo iron was so weak that freight differentials could be overlooked.

We quote f.o.b. per gross ton Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil.....	\$20.00 to \$20.50
No. 2X foundry, 2.25 to 2.75 sil.....	19.50 to 20.00
No. 2 plain, 1.75 to 2.25 sil.....	19.00 to 19.50
Basic.....	18.25 to 18.50
Malleable.....	20.00 to 20.50
Lake Superior charcoal.....	31.75

Finished Iron and Steel.—Bar and shape demand has shown marked improvement and a steady demand is also evident in cold-finished material. Other materials are slow and commodities such as bolts, nuts, pipe and wire, which have been fairly firm in demand, are very slow. Bar quotations at less than 1.50c. are more often heard and one desirable inquiry brought out a reported quotation of 1.42½c. Quotations of this kind are for immediate acceptance only and are withdrawn if the order is not forthcoming the same day. Some indication of the rolling situation may be gained through the experience of a buyer who placed an order for 50 tons of plates with a mill with the understanding that rolling must start the same day and the order was taken on that basis. The Lackawanna Bridge Co., now operating as a subsidiary of the Lackawanna Steel Co., will fabricate 1400 tons of shapes for the new Ford hotel, Buffalo. A new hotel proposition in Syracuse involving 3500 tons is interesting local fabricators, but bids have not been asked. The Buffalo Steel Car Co. is working on 500 cars for the Lackawanna Railroad.

Warehouse Business.—Sheet and bar orders showed slight gain, but structural demand is quiet. Prices on shafting have been reduced. The lack of interest on the part of many regular warehouse customers which was attributed to the inventory period, has passed, and a wider circle of buyers lead to encouragement.

We quote warehouse prices f.o.b. Buffalo as follows: Structural shapes, 2.65c.; plates, 2.65c.; plates, No. 8 gage, 3.35c.; soft steel bars and shapes, 2.55c.; hoops and bands, 3.15c.; blue annealed sheets, No. 10, 3.40c.; galvanized steel sheets, No. 28, 5.25c.; black sheets, No. 28, 4.25c.; cold-rolled strip steel, 5.90c.; cold-rolled round shafting, 3.40c.

Old Material.—A mill has bought several consignments of steel at \$13.50, but the aggregate of its purchases is far short of its needs. Dealers are firm in the decision not to release steel at this price and a \$14 price is likely to be the ruling quotation daily.

Inquiry from outside the district for turnings and borings comes to hand daily, but no business develops because of the low production in this district.

We quote dealers' asking prices per gross ton f.o.b. Buffalo as follows:

Heavy melting steel.....	\$13.00 to \$14.00
Low phos., 0.04 and under.....	17.00 to 18.00
No. 1 railroad wrought.....	15.00 to 16.00
Car wheels.....	16.50 to 17.50
Machine shop turnings.....	7.50 to 8.00
Cast iron borings.....	7.00 to 8.00
Heavy axle turnings.....	10.50 to 11.50
Grate bars.....	12.00 to 13.00
No. 1 busheling.....	10.00 to 11.00
Stove plate.....	15.00 to 16.00
Bundled sheet stampings.....	8.00 to 9.00
No. 1 machinery cast.....	17.00 to 18.00
Hydraulic compressed.....	10.50 to 11.50
Railroad malleable.....	13.00 to 14.00

Cincinnati

CINCINNATI, Jan. 24.

Pig Iron.—The market continues quiet. Although a slight increase in activity is to be noted, nothing approaching a buying movement has developed, and while some big inquiries are current in connection with the New York tunnel project, the trade as a whole is not very optimistic as to any of this business being placed so far West. One of these inquiries from a nearby melter calls for 20,000 tons. Other inquiries include one of 1000 tons from a local melter, 300 tons of low phosphorous from a Tennessee melter, and 100 tons from a central Ohio manufacturer. A Louisville melter is expected to buy 500 tons of foundry iron during the week, and a deal for 200 tons of charcoal iron will be closed to-day. Sales during the week were mostly of Southern iron in lots up to 100 tons, the prices ranging from \$15.60 to \$16, Birmingham, the former price being made by a furnace which has a slight freight advantage over Birmingham. The Southern market is weak at \$16, and it is said that a desirable tonnage might be placed at less, though on business offered Alabama furnaces have not quoted lower than \$16. In the North Chicago and lake furnaces iron is said to be available at \$18.50, and this price has been quoted. Southern Ohio furnaces are quoting \$19.50 to \$20, and have booked some orders at these figures. The minimum figure is being quoted in competitive territory, and it is said furnaces in the Ironton district have no disposition to shade this figure.

Based on freight rates of \$4.50 from Birmingham and \$2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	\$20.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	21.00
Ohio silvery, 8 per cent sil.	32.02
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	22.02
Basic, Northern	22.02
Malleable	22.52

Finished Material.—A Southern railroad has bought 400 tons of steel bars at 1.50c., Pittsburgh. The same road is also reported to have placed approximately 3500 tons of splice bars with an unnamed producer. With these exceptions, orders for finished materials during the week were rather light, although an order for 300 tons of wire products was placed by a manufacturer in this district. A local fabricator is figuring on two oil storage tanks in the Southwest which will take approximately 1000 tons of plates. Inquiries for the most part are confined to carload lots, although in some instances 100 tons are asked for. The market on the whole is not showing the activity that was expected, though bookings are showing a gradual increase. No price changes are reported on business done in this district, bars, shapes and plates still being quoted at 1.50c., Pittsburgh, and black and galvanized sheets at 3c. and 4c. respectively. While reports are current of lower prices on wire nails, this may be accounted for by a number of mills which are quoting \$2.50 per keg at mill. There has been little new activity in the structural field. The Columbus, Ohio, board of education is getting bids on a high school which will take 200 tons. The U. S. Engineer's office, Louisville, Ky., will close bids on Feb. 17 for furnishing and delivering a steel maneuver boat hull for dam No. 48 on the Ohio River. The American Creosoting Co., Louisville, Ky., has placed 60 tons with the McClintic-Marshall Co. for a building at New Haven, Conn. This is the only

award reported in this district for last week. The structural steel for the Gibson Hotel addition will probably be let this week. A number of projects are taking more definite shape, including an addition to the Business Men's Club in Cincinnati and a building for the Chamber of Commerce. The Queen City Club is also expected to erect a new club house, work to begin early in the spring. A number of reinforced concrete projects are also expected to develop shortly. Bids will close on Feb. 23 for a \$500,000 high school at Midletown, Ohio, and the contract has been awarded for a \$200,000 building for the Home of the Friendless at Cincinnati.

Warehouse Business.—Warehouse sales show a slight improvement, although orders are for the most part small and for immediate delivery. Some business developed in cold rolled products, mostly from automobile accessory manufacturers. No further price changes are reported.

Iron and steel bars, 2.75c. base; hoops and bands, 3.35c. base; shapes and plates, 2.85c. base; reinforcing bars, 2.82½c. base; cold rolled rounds, 1½ in. and larger, 3.50c. base; under 1½ in. and flats, squares and hexagons, 4c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.25c.; No. 28 galvanized sheets, 5.25c.; wire nails, \$3.00 per keg base; No. 9 annealed wire, \$2.85 per 100 lb.

Coke.—The spot market on coke is showing only fair activity, but there has been some contracting for the year's requirements. Prices are unchanged, Connellsville foundry coke being quoted at \$3.75 to \$4.25, Wise County foundry \$5 to \$5.50, New River \$7 to \$7.50, and by-product fuel at \$6, Connellsville basis.

Old Material.—There is very little movement in scrap materials, and the market is inclined to weakness. Very little material is coming out, but dealers' yards are pretty well stocked against the time when improved demand sets in. While prices are softer, quotations are unchanged in the absence of trading.

We quote dealers' buying prices, f.o.b. cars:

Per Gross Ton	
Bundled sheets	\$3.50 to \$4.00
Iron rails	12.00 to 12.50
Relaying rails, 50 lb. and up.....	25.00 to 26.00
Rerolling steel rails.....	10.50 to 11.00
Heavy melting steel.....	9.00 to 9.50
Steel rails for melting.....	9.00 to 9.50
Car wheels	12.00 to 13.00

Per Net Ton	
No. 1 railroad wrought.....	8.50 to 9.50
Cast borings	3.00 to 3.50
Steel turnings	2.00 to 2.50
Railroad cast	12.00 to 12.50
No. 1 machinery.....	13.50 to 14.50
Burnt scrap	7.50 to 8.00
Iron axles	15.50 to 16.50
Locomotive tires (smooth inside)....	9.50 to 10.00
Pipes and flues.....	4.00 to 4.50

Birmingham

BIRMINGHAM, ALA., Jan. 24.

Pig Iron.—Third week of January was more nearly satisfactory than its two predecessors. The Birmingham market resisted effort at forcing lower prices and hardened at \$16. Many firm offers of \$15.50, which were declined, came back for booking at \$16. At the close of the week, the \$16 base was seemingly entrenched. One maker did a very good business in small tonnages scattered over the South, Middle West and Southwest with some in the East. Lots of 100 tons were placed in Michigan, Ohio, Indiana and Baltimore territory. Total bookings of one company were around 1500 tons. Silicons are strictly maintained both above and below base, a lot of high silicon selling at \$18.50. Pipe makers are not in the market owing to the slowness of new business to develop. Makers report moving of the make and one maker is moving more than make. Practically all business is for prompt movement. Larger machine shop operators have been very little in the market for many months and are still seldom heard from.

We quote per gross ton f.o.b. Birmingham district furnaces as follows:

Foundry, silicon 1.75 to 2.25.....	\$16.00
Basic	15.00
Charcoal, warm blast.....	32.00

Cast Iron Pipe.—Sanitary and high pressure pipe markets report little new business. The leading interest is shipping 1000 tons to the Pacific Coast following more than 5000 tons from several shops in Decem-

ber. This goes by Mobile at one-half the rail rate. The McWane Cast Iron Pipe Co. will soon ship special high pressure pipe makes to Honolulu. The sanitary base is \$37 for standard. High pressure base is nominal at \$33.

Finishing Mills.—The Tennessee company has only one idle finishing mill this week. All except the plate mill at Fairfield are in operation, the structural mill resuming Monday. The Bessemer plate mill is operating. It is presumed that the Ensley rail mill will get the greater part of the 35,000 tons of rails to be placed by the Southern Railway, in which case its known bookings for this year will carry the plan well beyond the first half at a steady pace of 6000 tons a week. Wire mills report greater interest in nails and wire. Sheet steel is continuously active.

Coal and Coke.—The Barrett Co. is turning out 100 tons of pitch coke per day in the leased beehive ovens of the Republic Iron & Steel Co. It is regularly entrenched in the foundry trade. Base is \$8. It is 98 per cent carbon. Other cokes are ruling at \$5.25 to \$5.50.

Old Material.—Scrap dealers report very little activity following temporary withdrawals of demand from pipe shops. Prices remain rather firm than not.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Steel rails.....	\$11.00 to \$12.00
No. 1 steel.....	10.00 to 11.00
No. 1 cast.....	14.00 to 15.00
Car wheels.....	13.00 to 14.00
Tramcar wheels.....	12.00 to 13.00
No. 1 wrought.....	12.00 to 13.00
Stove plate.....	11.00 to 12.00
Cast iron borings.....	6.00 to 7.00
Machine shop turnings.....	6.00 to 7.00

Cleveland

CLEVELAND, Jan. 24.

Iron Ore.—Ore firms do not look for any activity in the ore market before May. General conditions in the trade are about the same as a year ago, although the outlook is better in one respect in that while at this time last year ore consumption was declining from month to month, it is now on the increase. A canvass of many consumers indicates that on the average furnace companies with present operations have about enough ore to last them until August. Furnaces are showing more interest in the freight rates than in ore prices. Nobody is attempting to make an accurate guess on probable prices for the season because ore prices this year will depend to a considerable extent on what, if any, action is taken by the Interstate Commerce Commission in making a general reduction in rail rates. Lower rail rates on coal and other supplies will reduce mining costs as well as the cost of shipping ore from the mines to the upper lake ports, this rail charge being figured in the price of ore, which is sold f.o.b. lower lake port. It is stated that blast furnaces are showing less interest this year than a year ago in trying to obtain information as to probable prices to be used in preparing their inventories, as few made a profit during the past year and consequently do not feel the need of showing losses on ore inventories to offset against profits in income tax returns.

We quote delivered lower lake ports: Old range Bessemer, 55 per cent iron, \$6.45; Old range non-Bessemer, 51½ per cent iron, \$5.70; Mesabi Bessemer, 55 per cent iron, \$6.20; Mesabi non-Bessemer, 51½ per cent iron, \$5.55.

Pig Iron.—Interest during the week centered on numerous inquiries from foundries that are planning to bid on the segments for the New York vehicular tunnel. These inquiries ranged from 25,000 to 60,000 tons and came from foundries in the East, the Pittsburgh territory, and as far west as Cleveland. However, the feeling here is that Eastern foundries have the best chance of getting the business. The inquiries are for both No. 2 and No. 3 iron. Furnaces and prospective purchasers seem unable to agree on any selling arrangement mutually satisfactory. Foundries want a fixed price for a period of about 15 months, objecting to paying market prices at time of shipment, as that would not permit them to figure their costs. Furnaces, on the other hand, generally are not inclined to sell at a fixed price for longer than a three months' period.

One was asked to quote a flat price for delivery through the present year, but declined. The market was rather quiet in actual sales during the week. Two or three Ohio consumers placed 500-ton lots of foundry iron with a Cleveland furnace at \$19 to \$20 for No. 2 for the first quarter's delivery and another lake furnace reports a number of small lot sales of foundry iron aggregating 1000 tons at the same range in prices, the price depending on delivery point. A sale to a Cleveland consumer is reported at \$20.50 at furnace. Some business was taken by a western Pennsylvania furnace on the basis of \$19, Valley, for foundry iron, or 50c. below the price regularly quoted by furnaces located in the Valley district. A few small lot sales of Southern iron were made on the basis of \$16 for 1.75 to 2.25 per cent silicon iron.

Quotations below are f.o.b. local furnace for Northern foundry iron, not including a 56c. switching charge. Other quotations are delivered Cleveland, being based on a \$1.96 freight rate from Valley points, a \$3.36 rate from Jackson and a \$6.67 rate from Birmingham:

Basic	\$20.21 to \$20.71
Northern No. 2 fdy., sil. 1.75 to 2.25..	19.00 to 20.00
Southern fdy., sil. 1.75 to 2.25.....	22.67
Ohio silvery, sil. 8 per cent.....	22.86
Standard low phos., Valley furnace..	33.00

Wire Products.—The arbitrary differential announced last week on basic and Bessemer wire for Cleveland delivery in place of the freight rate from Pittsburgh, has been extended by the American Steel & Wire Co. to cover nails, but so far has not been applied to the other products of this company's Cleveland plants. The differential is 10c. per 100 lb. and means the equalizing of the freight rate from Youngstown or the absorbing by the mill of practically half the freight rate from Pittsburgh. The customer will be charged the Pittsburgh base price plus 10c. per 100 lb. instead of the present Pittsburgh-Cleveland freight rate of 21c. per 100 lb. as figured on the combination short haul basis. It should be noted that these prices, which are for both jobbers and manufacturers, are for Cleveland delivery only. Orders from outside of Cleveland placed directly with the mill or through a Cleveland jobbing house for direct mill shipment to an out-of-town customer, will carry the usual Pittsburgh price, plus the freight from Pittsburgh to destination.

Sheets.—The demand for sheets has broadened materially, increasing the number of orders, which are all for small lots. The Detroit automobile manufacturers have withheld purchases this month until they received reports of sales from some of the automobile shows, but more activity is expected from this source during the week. Prices are being firmly maintained.

Semi-Finished Steel.—The market is very dull and prices are not clearly defined. While \$29 is the usual quotation, the belief is general that both sheet bars and slabs can be bought at around \$28.

Finished Material.—Orders for finished steel have improved somewhat and inquiries are more plentiful, but buying is only in small lots. Prices seem to be generally maintained at 1.50c. for steel bars, plates and structural material, although in some cases these prices have been shaded \$1 to \$2 a ton. Some of the smaller plate mills have been adhering to 1.60c., but at least one of these has been forced down to the 1.50c. price. However, sales of boiler plate are still being made at 1.60c. No new developments have appeared in the lake shipbuilding industry, although lake shipyards have quotations out on one or two freight boats. Little activity has appeared so far this year in structural work in this territory. The new building for the Union Trust Co., Cleveland, will require 1000 tons of sheet steel piling, which will be placed shortly, provided the bank goes ahead this year with the erection of its building. Steel for the building was placed and fabricated last year, but construction was postponed until building costs went down. The bank is now asking for bids for the general contract and if prices are satisfactory, the work will go ahead. Ohio fabricators are preparing to bid on the Union Station, Chicago, requiring 16,000 tons of steel, and a bridge across the Missouri River at Booneville, Mo., requiring 2000 tons. The outlook in the agricultural implement industry is not prom-

(Continued on page 308)

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia, domestic	\$0.36	Kansas City	\$0.815
Philadelphia, export	0.265	Kansas City (pipe)	0.77
Baltimore, domestic	0.35	St. Paul	0.665
Baltimore, export	0.255	Omaha	0.815
New York, domestic	0.38	Omaha (pipe)	0.77
New York, export	0.285	Denver	1.35
Boston, domestic	0.405	Denver (wire products)	1.415
Boston, export	0.285	Pacific Coast	1.665
Buffalo	0.295	Pacific Coast, ship plates	1.335
Cleveland	0.24	Birmingham	0.765
Detroit	0.325	Jacksonville, all rail	0.555
Cincinnati	0.325	Jacksonville, rail and water	0.46
Indianapolis	0.345	New Orleans	0.515
Chicago	0.38		
St. Louis	0.475		

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb. and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 55c.; ship plates, 75c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes and wire hoops, 75c.; sheets and tin plates, 60c. to 75c.; rods, wire rope, cable and strands, 11; wire fencing, netting and stretcher, 75c.; pipe, not over 8 in. in diameter, 75c.; over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, ¼ in. thick and over, and zees, structural sizes, 1.50c. to 1.60c.

Sheared plates, ¼ in. and heavier, tank quality, 1.50c.

Wire Products

Wire nails, \$2.50 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.25 and shorter than 1 in., \$1.75; bright Bessemer and basic wire, \$2.25 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$2.25; galvanized wire, \$2.75; galvanized barbed wire, \$3.15; galvanized fence staples, \$3.15; painted barbed wire, \$2.65; polished fence staples, \$2.65; cement-coated nails, per count keg, \$2.00; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 68 to 70½ per cent off list for carload lots; 67 to 69½ per cent for 1000-rod lots, and 66 to 68½ per cent for small lots, f.o.b. Pittsburgh.

Bolts and Nuts

Machine bolts, small, rolled threads, 70, 10 and 5 to 70, 10 and 7½ per cent off list
Machine bolts, small, cut threads, 70 and 5 to 70 and 10 per cent off list
Machine bolts, larger and longer, 65, 10 and 5 to 70 and 10 per cent off list
Carriage bolts, ¾ in. x 6 in.:
Smaller and shorter rolled threads, 65, 10 and 10 per cent off list
Cut threads 65 and 10 to 70 per cent off list
Longer and larger sizes 65 and 10 to 70 per cent off list
Lag bolts 70 and 10 to 70, 10 and 5 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads 60 and 10 per cent off list
Other style heads 20 per cent extra
Machine bolts, c.p.c. and t. nuts, ¾ in. x 4 in.:
Smaller and shorter 65 and 5 per cent off list
Larger and longer sizes 65 per cent off list
Hot pressed sq. or hex. blank nuts \$5.50 off list
Hot pressed nuts, tapped \$5.00 to \$5.25 off list
C.p.c. and t. sq. or hex. blank nuts \$5.25 off list
C.p.c. and t. sq. or hex. blank nuts, tapped \$5.00 off list
Semi-finished hex. nuts:
¾ in. to 9/16 in. inclusive 80, 10 and 10 per cent off list
Small sizes S. A. E. 80, 10, 10 and 10 per cent off list
¾ in. to 1 in. inclusive, U. S. S. and S. A. E.
70, 10, 10 and 10 per cent off list
Stove bolts in packages 80, 10 and 5 per cent off list
Stove bolts in bulk 80, 10 and 7½ per cent off list
Tire bolts 65, 10 and 10 per cent off list
Track bolts, carloads 3c. to 3.25c. base
Track bolts, less than carloads 4c. to 4.25c.

Upset Square and Hex. Head Cap Screws

¾ in. and under 80 and 10 per cent off list
9/16 in. to ¾ in. 80 and 10 per cent off list

Upset Set Screws

¾ in. and under 80, 10 and 5 to 85 per cent off list
9/16 in. to ¾ in. 80, 10 and 5 to 85 per cent off list

Milled Square and Hex. Cap Screws

All sizes 75 and 10 per cent off list

Milled Set Screws

All sizes 70, 10 and 10 per cent off list

Rivets

Large structural and ship rivets \$2.25
Large boiler rivets 2.35
Small rivets 70, 10 and 10 to 70, 10, 10 and 5 per cent off list

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$36 to \$38; chain rods, \$36 to \$38; screw stock rods, \$41 to \$43; rivet and bolt rods and other rods of that character, \$36 to \$38; high carbon rods, \$43 to \$50, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, \$2.15 to \$2.20 base per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ½-in., ¾-in. and 7/16-in., \$2.25 to \$2.30 base; 5/16-in., \$2.25 to \$2.30 base. Boat and barge spikes, \$2.25 to \$2.30 base per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Track bolts, 3c. to 3.25c. base per 100 lb. Tie plates, \$2 per 100 lb. Angle bars, \$2.40 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., \$9.30 per package; 8-lb. coating, 1 C., \$9.60; 15-lb. coating, 1 C., \$11.80; 20-lb. coating, 1 C., \$13; 25-lb. coating, 1 C., \$14.25; 30-lb. coating, 1 C., \$15.25; 35-lb. coating, 1 C., \$16.25; 40-lb. coating, 1 C., \$17.25 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars, 1.50c. to 1.60c. from mill. Refined bar iron, 2c. to 2.10c.

Welded Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/8	54½	28	1/8 to 1/4	3½	22½
1/4	60	33½	1/4	36½	18½
3/8	65	50½	3/8	42½	27½
1/2	69	56½	1 to 1½	44½	29½
1 to 3	71	58½			
Lap Weld			Butt Weld		
2	64	51½	2	39½	25½
2½ to 6	68	55½	2½ to 6	42½	29½
7 to 8	65	51½	7 to 12	40½	27½
9 to 12	64	50½			
Butt Weld, extra strong, plain ends			Lap Weld, extra strong, plain ends		
1/8	50½	33	1/8 to 1/4	4½	37½
1/4 to 3/8	56	38½	1/4	35½	23½
1/2	62	50½	3/8	42½	28½
3/4	67	55½	1 to 1½	44½	30½
1 to 1½	69	57½			
2 to 3	70	58½			
Lap Weld, extra strong, plain ends			Butt Weld, extra strong, plain ends		
2	62	50½	2	40½	27½
2½ to 4	66	54½	2½ to 4	43½	31½
4½ to 6	65	53½	4½ to 6	42½	30½
7 to 8	61	47½	7 to 8	35½	23½
9 to 12	55	41½	9 to 12	30½	18½

To the large jobbing trade the above discounts are increased by one point, with supplementary discounts of 5 and 2½ per cent.

Boiler Tubes

The following are the discounts for carload lots f.o.b. Pittsburgh:

Lap Welded Steel		Charcoal Iron	
1½ in.	26½	1½ in.	5
2 to 2½ in.	41	1½ to 1¾ in.	15
2½ to 3 in.	52	2 to 2½ in.	25
3½ to 4 in.	57	2½ to 3 in.	30
		3½ to 4½ in.	32

Standard Commercial Seamless Boiler Tubes

New discounts have been adopted on standard commercial seamless boiler tubes, but manufacturers are not yet ready to announce them for publication, and for that reason we publish no discounts this week.

Sheets

Prices for mill shipments on sheets of standard gage in carloads, f.o.b. Pittsburgh, follow:

Blue Annealed		Box Annealed, One Pass Cold Rolled	
Cents per Lb.		Cents per Lb.	
No. 8 and heavier	2.20	No. 28 (base)	3.00
No. 9 and 10 (base)	2.25	No. 29	3.10
		No. 30	3.20
Galvanized		Tin-Mill Black Plate	
Cents per Lb.		Cents per Lb.	
No. 10 and 11	3.00	No. 24 (base)	3.00
No. 12 to 14	3.10	No. 29	3.05
No. 15 and 16	3.25	No. 30	3.05
No. 17 to 21	3.40	No. 30½ and 31	3.10
No. 22 to 24	3.55		

NON-FERROUS METALS

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York*		Straits Tin	Lead		Zinc	
	Lake	Electro-lytic	New York	New York	St. Louis	New York	St. Louis
Jan. 18.....	13.87½	13.62½	32.37½	4.70	4.40	5.07½	4.72½
19.....	13.75	13.50	32.25	4.70	4.40	5.05	4.70
20.....	13.75	13.50	32.12½	4.70	4.40	5.02½	4.67½
21.....	13.75	13.50	.....	4.70	4.40	5.00	4.65
22.....	13.75	13.50	31.50	4.70	4.40	5.00	4.65
23.....	13.75	13.50	31.25	4.70	4.40	5.00	4.65

*Refinery quotation.

New York

NEW YORK, Jan. 24.

There is no improvement in demand for most of the metals. Buying of copper is extremely light and quotations are lower. The tin market has been fairly active but prices dropped suddenly yesterday. Lead is the only market which maintains its strength. Demand for zinc could hardly be less and as a consequence prices have fallen off.

Copper.—Large consumers of copper remain out of the market, due largely to the heavy purchases which they made in the last quarter of last year. As a result the light demand is easily taken care of by large and small dealers and some small producers who are ready to meet bids under the market. As a result electrolytic copper is available from such sources at 13.50c., refinery, or 13.75c., delivered, for the first quarter, and at 13.87½c. or 14c., delivered, for second quarter, some light sales having been made at these prices for these positions. The market is entirely without feature. Lake copper is slightly lower at 13.75c., New York or delivered.

Tin.—The activity last Tuesday, Jan. 17, referred to in this market, details of which are now available, amounted to sales of 400 to 500 tons of Straits tin and was the most active day in the past week, dealers buying in good volume. On that day January metal sold at 32.12½c. This activity on the part of dealers continued until Jan. 21, the total sales, including those referred to, amounting to 800 to 900 tons. The feature of the present market is the premium on spot and January delivery, amounting in some cases to ½c. per lb. over futures. This is due either to a scarcity of metal or to the fact that prompt supplies are in strong hands. Yesterday the London market broke \$4 per ton, but this had no effect in causing buyers to be interested, the market being stagnant. To-day the London market was only slightly below that of Monday, with spot standard selling at £158 10s., future standard at £160 and spot Straits at £160 10s., all about \$5 per ton below prices a week ago. Quotations for spot Straits tin here to-day were 31.25c., New York. A feature of the London market yesterday and Monday was the large volume of business, sales amounting those two days to 2390 tons, mostly futures. It is interesting to note that there are offerings now of Chinese tin here at low prices, Chinese sellers being eager to make transactions on the approach of the Chinese new year. Arrivals thus far this month have been 3565 tons, with 4935 tons reported afloat.

Lead.—There is no change in either demand or prices, both being steady with that of the leading interest at 4.70c., New York and St. Louis, and that of the independents at 4.40c., St. Louis, and 4.70c. to 4.75c., New York and Eastern points. Demand is reported good from battery and pigment interests and there is a good inquiry for future shipment.

Zinc.—This market is reported as quiet as at any time last summer, sales being few and far between and confined in most cases to carload lots to meet early needs of consumers. As a result prime Western for early delivery has declined to 4.65c., St. Louis, or 5c., New York, or a fall of ¼c. per lb. in the past week. There are still those who feel that future conditions may result in some export shipment to England as the result of a possible scarcity there.

Antimony.—The market is quiet and wholesale lots for early delivery are quoted at 4.45c. per lb., New York, duty paid.

Aluminum.—Wholesale lots of virgin metal, 98 to 99 per cent pure, are quoted by the leading interest at 19c. to 19.10c. per lb. f.o.b. plant, depending on the quantity, while the same grade is offered by importers at 17.50c. to 18.50c., New York, duty paid.

Old Metals.—The market is very quiet. Holders are generally unwilling to sell at concessions, and consumers waiting to see what the new metal market will do. Dealers' selling prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	13.25
Copper, heavy and wire.....	12.50
Copper, light and bottoms.....	10.00
Heavy machine composition.....	10.25
Brass, heavy.....	8.00
Brass, light.....	6.00
No. 1 red brass or composition turnings.....	8.25
No. 1 yellow rod brass turnings.....	6.25
Lead, heavy.....	4.25
Lead, tea.....	3.25
Zinc.....	3.00

Chicago

JAN. 24.—While there has been no particular pressure to sell, such sales as have been made have been at concessions. In the virgin metals declines are recorded in copper, tin and spelter and most grades of old metals are lower. We quote in carload lots: Lake copper, 13.75c.; tin, 32.50c.; lead, 4.50c.; spelter, 4.75c.; antimony, 6.50c., in less than carload lots. On old metals we quote: Copper wire, crucible shapes and copper clips, 10c.; copper bottoms, 7.50c.; red brass, 7.50c.; yellow brass, 5.75c.; lead pipe, 3.25c.; zinc, 2c.; pewter, No. 1, 22c.; tin foil, 23c.; block tin, 25c.; all buying prices for less than carload lots.

St. Louis

JAN. 24.—The market for lead and zinc is unchanged. We quote lead at 4.40c., carlots, and slab zinc at 4.80c. On old metals prices are: Light brass, 3.50c.; heavy red brass and light copper, 7c.; heavy yellow brass, 4c.; heavy copper and copper wire, 7.50c.; zinc, 2c.; pewter, 15c.; tin foil, 16c.; tea lead, 2c.; aluminum, 9c.

Warning as to Strike

WASHINGTON, Jan. 24.—Warning sounded last week by Secretary Hoover that a coal strike of bituminous miners now seems likely, was made as a suggestion to industrial and other consumers so that they may be given opportunity to lay in a stock of supplies for use during the strike, if it occurs. Wage agreements with operators expire on April 1, and producers have announced that a reduction in wages is necessary. Vigorous opposition is being made by operators. Anthracite miners at the same time are asking for a 20 per cent increase in wages. It remains to be seen whether consumers of soft coal will stock up. One discouraging feature is the high freight rates and it is not expected that even if they are reduced as a result of the rate hearing now under way by the commission, the lower levels will become effective before April 1.

Mechanical Engineers' Activities

Germans may now apply for membership in the American Society of Mechanical Engineers. The council of the society at a meeting at Norfolk, Va., voted that hereafter there will be no discrimination among applicants because of citizenship, now that friendly relations have been resumed between the United States and nations with which it was recently at war.

A resolution was passed advising that the American Engineering Council make an investigation of a basis for wages in industry.

A committee has been appointed on research on riveted joints as follows: Allen D. Risteen, Sherwood F. Jeter, Alphonse A. Adler, Norman Slee and John F. Fairfield.

ROCHESTER SELECTED

American Foundrymen's Association Will Meet in That City, June 5

CHICAGO, Jan. 24.—C. E. Hoyt, secretary, announces that final arrangements have been made for holding the annual convention and exhibit of the American Foundrymen's Association and allied societies in Rochester, N. Y., the week of June 5, instead of in Cleveland as previously scheduled. This decision was reached following conferences on Jan. 18 and 19 with Mayor Kohler of Cleveland, at which time it was learned that due to the incomplete condition of the new public hall, uncertainty as to when it would be open to the public, and the manner in which it would be operated, it would be impossible for the city to give a lease for any specific date in 1922, and further, that because of these conditions the present administration could not honor the agreements which the previous administration had entered into with the foundrymen's association.

All the activities of the association will be centered at Exposition Park, Rochester's million dollar show place, located only a mile and a half from the center of the city. Comfortable and commodious assembly rooms for general and auxiliary meetings are available, while buildings Nos. 3, 4 and 5, all directly connected, afford better accommodations for all classes of exhibits than have been found in any other city where exhibits have been held. Rochester would have been first choice for two previous fall conventions had it been able to offer a greater number of hotel rooms.

For a June convention it has been possible for the Rochester citizens to increase their guarantees, and the committee feels certain that all members and guests can be comfortably taken care of. A plan is being worked out for handling all reservations through a hotel committee, to which each hotel has pledged a large quota of rooms. Reservation and application blanks with complete information will be issued as soon as the hotel committee is organized.

Results of Tariff Referendum

The Chamber of Commerce of the United States has announced the result of its referendum on the tariff. On the question of "reasonable protection for American industries," the affirmative vote was 1840 and the negative 27. On the creation of a tariff adjustment board to administer adjustable rates, the affirmative vote was 1379 and the negative 481. On maintaining the anti-dumping legislation, 1840 voted yes and 37 no. The chamber committee had recommended that the present system of valuation for levy of ad valorem duties should be maintained and stated that votes in opposition to this recommendation would be interpreted as in favor of American valuation. The vote was 979 yes and 833 no, but the vote in favor of the present system of valuation did not have a large enough majority to commit the chamber. On the question of postponing general tariff legislation until conditions in international trade and finance are sufficiently stabilized to form a basis for legislation possessing permanent value, 734 voted yes and 1110 no.

The committee on railroads of the Chamber of Commerce of the United States in its report to the board of directors, which is to be considered at the meeting of the National Council in Washington Feb. 8 and 9 recommends legislation authorizing the President to appoint and prescribe the compensation of a special administrative officer with the title Commissioner General of Transportation, whose duties it will be to promote and develop transportation facilities of the country in the light of the people's interest. It is not intended that the new officer is to take the place of the Interstate Commerce Commission, but he may conduct separate investigations to determine the facts as to pending matters.

FOREIGN RAILROADS BUY

Rails for Manchuria — Tin Plate, Wire Rods, Nails and Sheets for Japan

NEW YORK, Jan. 24.—Export inquiries during the past week have been largely dominated by foreign railroad buying. From the Far East, China continues to inquire for small lots of various kinds of material. A Japanese company is in the market for about 20,000 base boxes of oil size tin plate and there are a number of sheet inquiries active. M. W. Kellogg & Co., New York, who received the contract for fabricating the five pipe lines of 50-in. to 54-in. pipe for Formosa, has practically closed for the plate tonnage involved, about 2400 tons, all to be delivered in Formosa before Jan. 1, 1923.

The National Railways of Mexico are negotiating for the purchase of about \$300,000 worth of machine tools and the South Manchuria Railway Co. has issued an inquiry, closing the end of this month, for about 40 miles of 100-lb. rails, between 6000 and 7000 tons, with accessories. Bids are being obtained through exporters to the Far East, particularly Japanese export houses, but the South Manchuria Railway Co.'s office in New York may be made a buying office in the near future. Bids for furnishing this rail tonnage are also being received from British and Continental mills. German agents in this country were desirous of submitting bids, but the stipulation that delivery must be made in June, c.i.f. Dairen, Manchuria, prevented this competition. British sellers are reported to have quoted about £2 5s. under the American market price.

Among the active iron and steel items in Japanese inquiries are wire, wire rods, and wire nails. A fairly large tonnage of wire rods has been inquired for and several exporters have quoted on a total of several thousand kegs of nails. There is fairly steady buying of copper.

Brier Hill Steel Co.'s Heavy Loss

YOUNGSTOWN, OHIO, Jan. 24.—At the annual meeting of the Brier Hill Steel Co. to-day, stockholders were informed that the company sustained a total loss in 1921 of \$3,874,475, reducing its surplus as of the end of the year to \$17,652,032. James B. Kennedy, chairman of the board of directors, announced that the Brier Hill company has been engaging in merger discussions with six other independent interests and thought such a combination would prove a stabilizing influence. No report from the merger committees on valuation and plan of amalgamation has yet been made, it was stated. The past year was one of extremely adverse conditions, he said, but all economic indications point to nearby improvement. The company has little forward business on its books. The volume of business the past year was declared to be 38 per cent of capacity. The Brier Hill company has purchased an iron ore mine of 8,723,000 tons on the Mesabi range. Gross sales in 1921 of \$12,525,837 compare with \$44,222,219 in 1920. Payroll of \$4,695,000 was over 35 per cent of sales receipts last year. Production in 1921 was 203,545 tons and shipments 226,787 tons.

The company's repair account for the year totalled \$1,172,000. Among items that contributed to surplus reduction were a loss of \$1,172,574 encountered in conduct of business; writing down inventory \$758,367; depreciation \$761,939; shutdowns \$773,128. Dividend payments during year aggregated \$648,986. An estimated saving of about \$500,000 was made by operating properties rather than suspending, said the chairman, and in addition plants are in improved condition. The company has maintained quoted prices even to the extent of losing business, and any price cutting was to meet competition, it was declared. Directors and officers were re-elected.

Membership in the American Electro Chemical Society on Jan. 1 totalled 2354. In 1921 there were 140 new members accepted and 150 old members dropped, resigned or died. The membership on Jan. 1, 1921, was 2364 making a net loss of 10 last year.

PERSONAL

B. G. Roos, chief engineer in charge of passenger car design for the Pierce-Arrow Motor Car Co., Buffalo, has resigned to become connected with the Locomobile Co. of America, Bridgeport, Conn., in a like capacity. He will succeed A. L. Riker, who has been chief engineer for many years and who becomes a member of the board of directors.

At the annual meeting of the Victor Tool Co., Waynesboro, Pa., Jan. 12, H. C. Geist was re-elected president; Frank Barnett, vice-president; and R. G. Mumma, secretary. John Warehime has been succeeded as treasurer by J. G. Mumma, connected with the Landis Machine Co., but will remain on the board of directors. J. G. Mumma, S. F. Newman and Crawford Kirkpatrick are new members of the board of directors, all being connected with the Landis Machine Co.

George C. Mills, for the past 17 years affiliated with Naylor & Co., New York, most of that time as Pittsburgh district sales manager, has become associated with the recently organized firm of Lippincott Mills & Co., Inc., New York and Cleveland, as Pittsburgh resident manager, with offices at 976 Union Arcade, Pittsburgh.

Kenneth Seaver, who has been identified with the Harbison-Walker Refractories Co., Pittsburgh, for the past 19 years, latterly in the capacity of assistant general manager of sales, has been promoted to the position of general manager of sales, succeeding Judd J. Brooks, Jr., who has been appointed to the position of assistant to the president. Mr. Seaver graduated with the degree of civil engineer from the Massachusetts Institute of Technology and before joining the Harbison-Walker company, was with the Pennsylvania and Baltimore & Ohio railroads and also for a short time with the American Bridge Co.

G. E. Wilson, formerly of Toledo, has been appointed general manager of the Milan Machine & Tool Co., Milan, Mich.

H. M. Lee has been elected president and general manager of the Duplex Truck Co., Lansing, Mich.

Earl L. Smitherman, well known in Detroit as a foundry manager and plant superintendent for several large companies, has become associated with the Great Lakes Distributing Co., Detroit, and will have charge of sand and fire brick sales.

Franklin G. Smith, president Osborn Mfg. Co., Cleveland, sailed from New York Jan. 18, on a two or three months business trip abroad. He will visit England, France, Germany and Belgium.

A. M. D. Martin has resigned from the position of assistant general manager of the Adria Motor Car Corporation, Batavia, N. Y.

John E. Schindler of the Garden City Foundry Co., Chicago, has been elected president of the Chicago Foundrymen's Club for 1922. George E. Carlin of the United Boiler & Foundry Co., Hammond, Ind., was elected vice-president, and George H. Manlove, Penton Publishing Co., was re-elected secretary-treasurer. Retiring directors were re-elected for two years.

O. A. Brock, advertising manager of the Keystone Steel & Wire Co., Peoria, Ill., has been elected president of the Peoria-Chillicothe Electric Railway Co.

J. R. Stroh, manager of the mining and transportation departments of the Brier Hill Steel Co., Youngstown, Ohio, resumed his duties last week after a month's illness.

G. B. LeVan has severed his connection as vice-president and general manager of the La Belle Iron Works and plans to spend several months with his family in Florida.

L. E. Salom has been appointed district representative in New York for the Cleveland electric tramrail

division of the Cleveland Crane & Engineering Co., with headquarters at 50 Church Street, New York.

W. D. Blatz has been appointed general sales manager of the Bridgeport Brass Co. He joined the marketing organization of the Bridgeport Brass Co. in 1915.

T. J. Dillon was recently elected president and general manager of the Abendroth Brothers, Port Chester, N. Y., representing new interests which have taken over that plant. This concern was established in 1840 and makes soil pipe and fittings, gas ranges and heaters.

Alexander Glass, chairman Wheeling Steel Corporation, accompanied by Mrs. Glass, is at Winter Park, Fla., for a brief vacation.

Frank A. Weidman, for the past twelve years affiliated with the American Sheet & Tin Plate Co., in the special agent's department at Pittsburgh, has joined the Inland Steel Co., Chicago, as special representative.

S. H. Farkas has resigned as vice-president and director of the Exeter Machine Works, Inc., West Pittston, Pa.

C. B. Wilson, for several years engaged as pig iron salesman for Rogers, Brown & Co., New York, has accepted a similar position with Reed, Fears & Miller, New York.

OBITUARY

JOSEPH T. SLINGSBY, president Aborn Steel Co., 22 Clarke Street, New York, died by accident, Jan. 22. Mr. Slingsby was a resident of Rutherford, N. J. He was born in 1881 at Riverside, a suburb of Providence, R. I. He became connected with the Midvale Steel & Ordnance Co., in New York and in 1915 resigned to organize his own company, the Aborn Steel Co., representing the Century Steel Co. and the Ontario Electric Steel Co., both of Poughkeepsie, N. Y. He was New York representative of the Standard Gage Steel Co., Beaver Falls, Pa., and the United Alloy Steel Corporation, Canton, Ohio. Mr. Slingsby was a Mason and from 1920 to 1921 was president of the National League of Masonic Clubs.

THOMAS CLARK DILL, whose sudden death at 56 years of age on Jan. 6 was noted last week, will be succeeded as president of the T. C. Dill Machine Co., Inc., Philadelphia, by his widow, Mrs. Matilda J. Dill. A daughter, Mrs. Matilda Dill Moore, has been the company's secretary for several years. Mr. Dill was best known through the slotter which bears his name, but prior to patenting the slotter, he had manufactured and marketed a connecting rod patent. The business was established in 1888.

CHRISTOPHER MINER SPENCER, Hartford, Conn., inventor of the Spencer repeating rifle and the first automatic screw machine, died at the home of his son, Roger M. Spencer, Hartford, Jan. 14, after a very brief illness. Mr. Spencer had been sick only a few days, suffering from a general breakdown due to a cold. He was 88 years old, and was active in his work right up until his illness. Mr. Spencer was one of America's best-known inventors. Burial was in Windsor, Conn.

ARCHIBALD A. HUTCHINSON, who died on Jan. 19 at his home in Englewood, N. J., in his eightieth year, was one of the pioneer operators in the coke districts of western Pennsylvania. He owned the Standard and the Globe coal mines, and at the time of disposing of his interests to H. C. Frick in 1883 had 220 beehive ovens. He leaves his wife, a son and a daughter.

JOHN GOERGEN, founder of the Goergen-Machwirth Co., sheet metal contractor, Buffalo, N. Y., died Friday, Jan. 20. He was born in Germany and went to Buffalo 31 years ago.

HARRY ASA GRAMMES senior member L. F. Grammes & Sons, Allentown, Pa., died on Jan. 16.

Iron and Steel Markets

(Continued from page 303)

ising. With the irregularity in soft steel bars, hard steel reinforcing bars have settled down to a 1.40c. price and this possibly could be shaded. Hot-rolled strip steel in the wider sections and heavier gages that compete with steel bars are quoted as low as 1.85c. While the 3.50c. price on cold-rolled strip steel seems to be maintained, some mills are reported to be waiving extras on this material.

Jobbers quote steel bars, 2.36c.; plates and structural shapes, 2.46c.; No. 9 galvanized wire, 3.25c.; No. 9 annealed wire, 2.75c.; No. 28 black sheets, 3.75c.; No. 28 galvanized sheets, 4.75c.; No. 10 blue annealed sheets, 3.10c.; hoops and bands, 2.96c.; cold-rolled rounds, 3.25c.; flats, squares and hexagons, 3.75c.

Bolts, Nuts and Rivets.—The improvement in the demand for bolts and nuts noted last week continues, but buying is mostly in small lots. However, a few fair sized orders have been placed by automobile manufacturers. Prices appear to be fairly firm, local makers showing no disposition to go below regular quotations. The demand for rivets has quieted down after a little spurt of buying, but makers are getting some small lot inquiries. The market is not firm, some makers shading from \$1 to \$2 a ton the regular price of 2.25c., Pittsburgh, for structural and 2.35c. for boiler rivets.

Coke.—The demand for foundry coke in small lots continues fairly active as some foundries are either stocking up or placing orders for February shipment. A possibility of a coal strike has caused many foundries to stock up on coke. Prices are unchanged at \$4 to \$4.25 for standard Connellsville foundry cokes.

Old Material.—A Cleveland mill during the past few days purchased 7500 tons of machine shop turnings for a blast furnace at \$8 per ton. Orders for this material went to Cleveland dealers, but it is understood that most of the scrap will come from Detroit. There was also some activity during the week for machine shop turnings for Youngstown shipment, sales to dealers being reported at around \$9.75, Youngstown. Outside of machine shop turnings, the market was quiet during the week, but prices are firm. Dealers report some scarcity of turnings, but expect that the supply of this material will become plentiful now that the Detroit automobile manufacturers have increased operations.

We quote per gross ton, f.o.b. Cleveland, as follows:

Heavy melting steel.....	\$12.00 to \$12.50
Steel rails, under 3 ft.....	12.50 to 13.00
Steel rails, rerolling.....	14.00 to 14.50
Iron rails.....	12.00 to 12.50
Iron car axles.....	18.00 to 19.00
Low phosphorus melting.....	13.00 to 13.50
Cast borings.....	8.60 to 9.00
Machine shop turnings.....	8.00 to 8.25
Mixed borings and short turnings.....	8.60 to 9.00
Compressed steel.....	9.00 to 9.50
Railroad wrought.....	12.00 to 12.50
Railroad malleable.....	12.50 to 13.00
Light bundled sheet stampings.....	6.00 to 7.00
Steel axle turnings.....	9.00 to 10.00
No. 1 cast.....	15.00 to 16.00
No. 1 busheling.....	8.25 to 8.75
Drop forge flashings, over 10 in.....	7.50 to 8.00
Drop forge flashings, under 10 in.....	7.50 to 8.00
Railroad grate bars.....	12.75 to 13.00
Stove plate.....	13.00 to 13.25
Pipes and flues.....	8.50 to 9.00

Blast Furnace Activities

PITTSBURGH, Jan. 24.—The Jones & Laughlin Steel Co. yesterday put on the blast at one of its Eliza furnaces and now has six of its 12 furnaces making iron, three being in blast at its Woodlawn, Pa., works. It is probable that one of the two idle furnaces at the latter works will be blown in this week, at first on pig iron but later on ferromanganese. The American Steel & Wire Co. has one of its stacks at Donora, Pa., down for relining, but is making iron in the other Donora furnace and also in its two stacks at the Schoenberger works, Pittsburgh. Of the 140 merchant and steel works furnaces in the territory bounded by Johnstown, Pa., Portsmouth, Ohio, and Warren, Ohio, 52 now are making iron. This is the same number as a month ago, the starting up of one of the Jones & Laughlin Steel Co. furnaces and of the Trumbull-Cliffs furnace at Warren, Ohio, being offset by the blowing out of one Donora furnace and the banking of one Pittsburgh Steel Co. stack.

British Iron and Steel Market

England Selling Pig Iron to Continent — More Furnaces Blowing—Steel Position Gradually Improving
(By Cable)

LONDON, ENGLAND, Jan. 24.

Realizing that further early price concessions are improbable, pig iron consumers are placing orders. Sales have been made to both Scandinavia and Germany. Two more Cleveland furnaces have been put in blast. Hematite demand is moderate, with prices weakening; one additional furnace is operating.

Foreign ore is quiet. Bilbao Rubio is quoted at 26½s. (\$5.59) c.i.f. Tees. Durham coke is priced at 26½s. (\$5.59) delivered.

After twelve months of inactivity, the Lanarkshire Steel Co. is re-opening. Steel demand generally is improved, but orders are still inadequate fully to employ the plants.

Ship repairers are well occupied. Scottish makers of bar iron have reduced export extras 50 per cent.

Sambre Moselle has secured orders from the Argentine for 45,000 tons of rails.

Belgian merchant bars are quoted at £8 (1.51c. per lb.) f.o.b., for April and May delivery. German merchant bars are held at £7 17½s. to £8 (1.49 to 1.51c. per lb.) f.o.b., for April and May shipments. Luxemburg merchant bars are quoted at £7 10s. to £7 17½s. (1.41 to 1.49c. per lb.) f.o.b., for March, April and May delivery. French merchant bars are held at £8 to £8 15s. (1.51 to 1.65c. per lb.) f.o.b., for April and May shipments.

Belgian wire rods are quoted at £8 15s. (\$36.92) f.o.b., for April and May delivery. Belgian angles are quoted at £7 12½s. (1.44c. per lb.) f.o.b., for March and April shipment.

Tin plate is easier under the stimulus of cheaper steel. February and March positions are being sold at 19s. (\$4.01) basis, f.o.b., but the works generally are holding out for 19½s. (\$4.06) basis, f.o.b. Oil plate consumers are reported covered to the end of April. The home trade is taking small quantities of odd sizes.

Galvanized sheets are weak. Business is done below £16 (3.01c. per lb.) f.o.b. Some makers are asking up to £16 5s. (3.06c.) per lb.

Welsh works have sold black sheets, to Japanese specifications, at £16 10s. (3.11c. per lb.) f.o.b. France is buying fair quantities of C A sheets, down to £12 10s. (2.35c. per lb.) f.o.b., being accepted.

We quote per gross ton, except where otherwise stated, f.o.b. maker's works, with American equivalent figured at \$4.22 per £1 as follows:

Durham coke, delivered..	£1 5s. to £1 7s.	\$5.28 to \$5.70
Cleveland No. 1 foundry.	4 15	20.05
Cleveland No. 3 foundry.	4 10	18.99
Cleveland No. 4 foundry.	4 7½	18.46
Cleveland No. 4 forge....	4 10	18.99
Hematite	7 0*	29.54*
East Coast mixed.....	4 15 to 4 17½	20.05 to 20.57
Ferromanganese	15 0 & 14 10*	63.30 & 61.19*
Rails, 60 lb. and up.....	8 0 to 9 10	33.76 to 40.09
Billets	7 0 to 7 10	29.54 to 31.65
Sheet and tin plate bars,		
Welsh	7 5 to 7 7½	30.60 to 31.12
Tin plate, base box.....	0 19 to 0 19¾	4.01 to 4.17
		C. per Lb.
Ship plates	9 0 to 10 10	1.70 to 1.98
Boiler plates	12 10 to 14 0	2.35 to 2.64
Tees	9 10 to 11 0	1.79 to 2.07
Channels	8 15 to 10 5	1.65 to 1.93
Beams	8 5 to 10 0	1.55 to 1.88
Round bars, ¾ to 3 in....	10 10	1.98
Galvanized sheets, 24 g..	16 0 to 16 5	3.01 to 3.06
Black sheets	13 0	2.45
Steel hoops	12 0 & 12 5*	2.26 & 2.31*
Cold rolled steel strip, 20 g.	24 5	4.57

*Export price.

IRON AND INDUSTRIAL STOCKS

Erratic Price Movements of Steel Shares Attract Attention

The erratic price movements of some of the steel shares have attracted attention. Nothing has developed in the market for steel mill products or is likely to develop within the near future to warrant such advancing prices and subsequent declines in values as have been noted of late. But investing sentiment, like going business, moves up and down in turn. Fundamental industrial and money conditions continue to mend, although slowly. In the mean time shortages in many lines of commodities are more and more apparent, although they do not show on the surface because of the quietness of general business. That condition is becoming apparent in the raw wool market, and even with our large visible supplies the price of wheat responds quickly when buying appears. There are some evidences of shortages in sugar also. It is only fair to assume shortages in steel products, leather products and in a great many other lines exist.

The range of prices on active iron and industrial stocks from Monday of last week to Monday of this week was as follows:

Alle-Chal. com.	39 1/2 - 45	Lack. Steel	46 1/2 - 50
Alle-Chal. pf.	90 - 92	Midvale Steel	30 1/2 - 32 3/4
Am. Can. com.	33 3/4 - 34 3/4	Nat.-Acme	11 1/2 - 13 1/4
Am. Can. pf.	96 - 97 3/4	Nat. E. & S. com.	31 1/2 - 37 1/2
Am. C. & F. com.	146 - 148	Nat. E. & S. pf.	82 3/4 - 89
Am. C. & F. pf.	118 - 118 1/2	N. Y. Air Brake.	60 3/4 - 61 1/2
Am. Loco. com.	105 - 108 1/2	Nova Scotia Steel	24 1/2 - 28 3/4
Am. Loco. pf.	115 - 115	Press. Steel com.	64 - 66
Am. Rad. com.	83 - 83	Press. Steel pf.	92 1/2 - 93
Am. Stl. F. com.	32 3/4 - 33 3/4	Ry. Stl. S. com.	96 1/2 - 100 1/2
Am. Stl. F. pf.	96 1/2 - 96 1/2	Replodge Steel.	27 3/4 - 41
Bald. Loco. com.	95 3/4 - 98 1/2	Republic com.	52 3/4 - 56 1/2
Bald. Loco. pf.	106 - 106	Republic pf.	86 - 87 3/4
Beth. Steel com.	54 - 56 1/2	Sloss com.	37 1/2 - 44
Beth. Stl. Cl. B.	57 1/2 - 61 3/4	Sloss pf.	74 - 75
Beth. Stl. 8% pf.	108 1/2 - 109	Superior Steel.	26 1/2 - 31 1/2
Chic. Pneu Tool.	61 - 62	Un. Alloy Steel.	26 1/2 - 29
Col. Fuel	24 1/2 - 29 3/4	U. S. Pipe com.	16 1/2 - 20
Cruc. Steel com.	57 1/2 - 65	U. S. Pipe pf.	51 - 59
Cruc. Steel pf.	80 - 84	U. S. Steel com.	83 3/4 - 88
Gen. Electric	140 - 144 1/4	U. S. Steel pf.	116 1/2 - 118
Gr. N. Ore Cert.	31 3/4 - 32 3/4	Vanadium Steel.	31 1/2 - 37 3/4
Gulf States Steel	52 1/2 - 90 1/2	Va. I. C. & C.	87 1/2 - 94 1/2
Int. Har. com.	82 1/2 - 85 1/2	Westingh'g Elec.	50 1/2 - 51 1/2
Int. Har. pf.	108 - 110 1/2		

Industrial Finance

The annual report of the National Enameling & Stamping Co., which will be published about the middle of February, will show a deficit for the year ending Dec. 31, after dividends, of close to \$3,000,000. Earnings in 1920 after fixed charges were \$3,361,352, equal to \$17.07 a share on the \$15,591,800 common stock. Inventories at the close of 1920 were \$8,867,700. Part of the deficit to be shown this year will be the write-off for inventory depreciation. Dividends on the common stock have been passed by the St. Louis Coke & Chemical Co., which is largely owned by the National Enameling & Stamping Co.

The Louisville Sheet Steel Co., Louisville, Ohio, has been placed in the hands of Hubert C. Pontius, as receiver, as a result of bankruptcy proceedings brought by creditors in the Federal Court in Cleveland. It is stated that the liabilities are \$345,000 and the assets \$300,000.

George H. Williams has been appointed receiver of the Acta Brass Mfg. Co., Cleveland, operating a brass foundry making automobile parts. The operation of the plant will be continued for the present.

The Deep Drawn Metal Corporation, 30 Church Street, New York, has filed notice of increase in capital from \$30,000 to \$100,000.

Creditors of the American Motors Corporation, Plainfield, N. J., have agreed to accept an offer of \$200,000 for the personal property of the company, tendered by the American Motors Reorganization Syndicate, represented by Comus B. Penney, Greenboro, N. C. An initial payment of \$25,000 has been made, and the remainder will be made on Feb. 15, March 15 and April 15, with amounts of \$60,000, \$85,000 and \$30,000, respectively.

The Endicott Forging & Mfg. Co., Endicott, N. Y., has filed notice of increase in capital from \$300,000 to \$500,000.

The Cribben & Sexton Co., 680 North Sacramento Boulevard, Chicago, manufacturer of stoves, ranges, etc., has filed notice of increase in capital from \$300,000 to \$1,300,000.

The Locke Insulator Mfg. Co., Victor, N. Y., has filed notice of dissolution.

The Wire Goods Co., Worcester, Mass., wire goods manufacturer, has increased the capital stock of the company from \$125,000 to \$1,000,000, same to be used mainly in taking over three large Western wire plants by the Wire Goods Co. The

three concerns are the Cassidy-Fairbanks Co., Chicago; Andrews Wire & Iron Works, Rockford, Ill., and the Andrews Wire Works, Ltd., Walford, Ontario, Canada. Reginald Washburn, president of the company, returned last week from the West, and it is expected to close all details at a stockholders' meeting to be held this week. The Wire Goods Co. was incorporated in 1882.

The Virginia Iron, Coal & Coke Co. has declared a dividend of 50 per cent on the common stock, payable in 5 per cent cumulative preferred stock on Feb. 15 to stock of record Feb. 1. At the conclusion of this operation the company will have outstanding \$10,000,000 of common stock, par \$100, and \$5,000,000 of cumulative preferred stocks, as well as \$3,523,000 of first mortgage 5 per cent bonds, due March 1, 1949.

Trade Changes

The American Brass & Aluminum Founders Co., Chicago, has filed notice of change of name to the American Castings Co.

An agreement has recently been reached between the East Jersey Pipe Co., New York, and the Riter-Conley Co., Pittsburgh, whereby "Lock Bar" steel pipe, which has been exclusively controlled by the East Jersey Pipe Co. since its introduction into this country in 1905 and has been hitherto manufactured by the East Jersey Pipe Co. at its plant at Paterson, N. J., will be hereafter fabricated in the Pittsburgh district by the Riter-Conley Co., at its Leetsdale plant. This will permit considerable saving in freight rates and economy in manufacturing. The sale of "Lock Bar" steel pipe will continue to be exclusively in the hands of the East Jersey Pipe Co.

C. F. Kettering, president of the Delco Corporation and vice-president of the General Motors Corporation, has been elected a director of the Dayton (Ohio) Fan & Motor Co. The Dayton company reports it is operating at full capacity and has sufficient orders booked to keep it running full time for six months.

W. H. Stackhouse, manager of the Springfield plant of the French & Hecht organization, has been appointed general manager of the entire organization, with plants in Springfield, Ohio, and Davenport, Iowa. Mr. Stackhouse is one of the three principal partners in the company, which manufactures 75 per cent of the steel wheels used in the making of agricultural machinery in the United States and Canada. Mr. Stackhouse will in the future make his home in Davenport. H. J. Rober has been appointed as plant manager at Springfield.

C. D. Watson has retired as vice-president and director of the Sheet Metal Mfg. Co., Youngstown, Ohio, having disposed of his interest in the company to T. E. Farrell, president. He plans to re-engage in the jobbing of sheets. The sheet metal company was organized three years ago and has a warehouse in Youngstown.

Financial and industrial interests of Youngstown, Ohio, have formed the Youngstown Equipment Co., which has taken over, under lease, the car shops of the Erie railroad at Kent, Ohio. Following a period of idleness, the plant has been started. It employs 700 men when operating normally. William Wilkoff, president of the Youngstown Steel Car Co., heads the equipment company.

Sydney Player, Joseph N. Bethel, Richard S. Staples, Herbert S. Indge and Alfred E. Box have left the Taft-Peirce Mfg. Co., Woonsocket, R. I., machinery designer and builder, to become en bloc stockholders and executives in the reorganized Warren F. Fraser Co., Westboro, Mass. The Warren company which was incorporated in 1914, manufactures cylindrical grinding machinery, plain cylinder grinders of all types, special machine tools and metal products. The reorganized company is placing on the market a new automatic cylindrical grinder. The officials of the reorganized Warren F. Fraser Co. are as follows: Warren F. Fraser, president, a member of the American Society of Mechanical Engineers and inventor of the new Fraser automatic cylindrical grinder; Frank H. McClaskey, vice-president; Sidney Player, vice-president and general manager, for 10 years factory manager of the Newall Engineering Co., London, previous to his becoming production manager of the Taft-Peirce plant a year ago; Joseph N. Bethel, vice-president and sales manager, for 23 years with the Taft-Peirce Mfg. Co. in various capacities; Maurice J. Cashman, treasurer; Richard S. Staples, assistant treasurer and metallurgist; Herbert S. Indge, consulting engineer; Alfred E. Box, factory superintendent.

The Universe Corporation, 341 East Ohio Street, Chicago, Ill., expects to build its own refrigerators and do its own machine work. It has already arranged for all the equipment it will require for a period of about six months. The company is also preparing to manufacture mechanical refrigerators and cooling devices for office use.

IDEAL INDUSTRIAL RELATIONS

Milwaukee Declaration of Principles Protecting Both Labor and Capital

MILWAUKEE, WIS., Jan. 20.—Thirty-one industrial groups, including the Metal Trades and Founders' Association, Automotive Manufacturers' Association, Iron and Steel Fabricators' Society, Sheet Metal Manufacturers and Contractors' Association, Chandelier Manufacturers' Association, Brass Founders and others, are now embraced by the Milwaukee Employers' Council, which was organized late in 1920 and began functioning at the beginning of 1921. The first annual meeting, held Jan. 17, resulted in the election of the following officers:

President, Herman A. Wagner, president Wisconsin Bridge & Iron Co.; vice-president, Richard P. Tell, president and general manager National Brake & Electric Co.; treasurer, Harold H. Seaman, president Seaman Body Corporation; secretary and manager, Joseph McC. Bell, 288 East Water Street, Milwaukee.

With virtually every major industry in its membership, and a number of minor lines of manufacturing and employment classes in Milwaukee, the council has assumed an important and definite leadership in industrial relations. Its aims and purposes are enunciated clearly in the following formal "Declaration of Principles" upon which it was founded and is carrying forward its work:

The principles and ideals of the Milwaukee Employers' Council are embodied in those of the founders of this nation, as expressed in the Declaration of Independence and the Constitution of the United States: viz., that all men, without regard to race, color, or previous condition, are entitled to an equal right and op-

portunity to enjoy life, liberty and the pursuit of happiness, and that this should be exercised by each individual in a spirit of fairness and recognition of the rights of every other individual.

The application of these ideals in industry establishes a system spoken of in industrial terms, as "the open shop"—a system prevailing in shops, factories, stores and on contract work, etc., under which men and women are employed on a basis of ability and honesty, without regard to their affiliations, religious, political, union or otherwise, and under which no discrimination is practiced as to such affiliation.

The council expresses its disapproval of any industrial system which does not provide to every man and woman equal rights and opportunities, or which imposes unnatural limitations upon his or her efforts to attain success.

It holds that fairness, forbearance and good will are the pre-requisites of peace and harmonious co-operation in all the social and economic relations of men; that the interests of the employee and employer are reciprocal; that the success of industrial processes is the result of co-operation between employee and employer, and that their attitude must be that of friends and not of foes. To this end the council hereby reaffirms its policies and principles as set forth in its constitution and by-laws, which are as follows:

1. To promote, on a fair and equitable basis, industrial peace and prosperity in the community, and the steady employment of labor.
2. To provide proper safeguards for the health and safety of the employees.
3. To secure for employer and employee alike freedom of contract in the manner of employment.
4. To discourage strikes, lockouts, and unfair demands by either employer or employee.
5. To uphold the principle of the open shop.

Gain in Metal Working at Milwaukee

MILWAUKEE, WIS., Jan. 21.—"The gain in iron and steel, while confined to a few plants, is a cheerful indication," says *Business and Financial Comment*, issued by the commercial service department of the First Wisconsin National Bank of Milwaukee, speaking of a gain of 6.2 per cent in the number of persons employed in the iron, steel and machinery industrial group of the city during December, compared with November. A gain of 5.07 per cent in the automobile parts and accessories industry also is reported. In a general way, the number employed in Milwaukee county at the close of last month was 5.7 per cent greater than at the close of November, which showed a loss of 3.02 per cent from October. The review says further: "Production and sales of many lines of industry in Milwaukee indicated a lull in December which was characteristic of industrial activity all over the country. Firms making automobile accessories and parts for popular-priced cars have large orders on hand for late winter and spring delivery. The automobile truck industry is still quiet, but should receive stimulation from the prospective activity and construction this year."

Fewer Steel Workers at Higher Wages

Iron and steel plants, according to figures of the Bureau of Labor Statistics, show for December a loss of 232 employees from November in 120 establishments. This loss of 0.2 per cent is accompanied by a gain of 5 per cent in the amount of the payroll, and by an advance from \$42.46 to \$44.66, or 5.2 per cent, in the average pay envelope. Automobile building, on the other hand, has fallen off, both in number of employees and in total and average wage. There were 2742 fewer men (3 per cent), and the average pay was \$2.53 (4½ per cent) less per half-month. Men engaged in building and repairing railroad cars have increased 1822 in number (3.2 per cent), but the average wage has decreased 17c. for the half-month (0.3 per cent).

Although the steel worker is the only one of the

three groups receiving an increased average pay in December, the other two, averaging \$58.13 to his \$44.66, were getting 30 per cent more than he.

To the figures as furnished by the bureau have been added totals for the three metal-working branches covered by the bureau. These total figures show a loss of 1152 in number of employees, compared with November, but the average pay has increased 14c. (0.3 per cent). In the table, figures for December, 1920, are compared with those for the two last months of 1921.

Period	Number of Establishments	Number of Men	Half-Month Payroll	Average Half-Month Pay
<i>Iron and Steel</i>				
December, 1920.	121	177,016	\$13,755,557	\$77.70
December, 1921.	120	124,871	5,576,970	44.66
November, 1921.	120	125,103	5,312,453	42.46
<i>Automobiles</i>				
December, 1920.	52	94,475	5,745,809*	60.82
December, 1921.	51	87,833	5,009,052*	57.03
November, 1921.	51	90,575	5,394,942*	59.56
<i>Car Building and Repairing</i>				
December, 1920.	61	73,455	5,385,217	73.32
December, 1921.	61	58,354	3,487,623	59.77
November, 1921.	61	56,532	3,388,556	59.94
<i>Metal Working Plants†</i>				
December, 1920.	234	344,946	24,886,583	72.15
December, 1921.	232	271,058	14,073,645	51.92
November, 1921.	232	272,210	14,095,951	51.78

*Equivalent half-month payroll; 2 1/6 times the weekly figure quoted by the bureau.

†Sum of the three groups detailed above.

More Unemployment in Illinois

Employment in Illinois industries declined in December for the third consecutive month, according to statistics compiled by the general advisory board of the Illinois Department of Labor. Signed reports from 731 firms in all parts of the State show a reduction that runs throughout the range of industries, and varies from 3.3 per cent in the metal machinery and conveyances group to 18.4 per cent in the stone, clay and glass products group. The reduction in the volume of em-

ployment for industries amounts to 4 per cent. The December slump follows reductions of 0.9 per cent in November and 2.6 per cent in October. The drop in the number of employees in down-State cities was more pronounced than in Chicago. Reports from 336 Chicago firms show only 2.7 per cent fewer employees on Dec. 31 than on Nov. 30, as contrasted with the 4 per cent drop for the State at large.

Cost of Living Stationary

Monthly figures of the Bureau of Labor Statistics show the wholesale price of all commodities during December to be 49 per cent above the average for 1913, compared with 49 per cent in November and 50 per cent in October. There was a slight drop in farm products, in cloths and clothing, in food and in drugs and chemicals. Building materials are up 6 points, to 203, and fuels and miscellaneous items have advanced. Metals are stationary, at only 19 per cent above 1913; house furnishings are also stationary, but stand at 218, or more than double 1913.

Our table shows the figures for the two most recent months, for December, 1920, and the peak of 1920. It shows also the amount of liquidation, between the peak price and the present, of the excess of the peak price over the average of 1913. Metals have been liquidated 80 per cent, only one group (farm products) showing a higher degree of liquidation.

Index Numbers of Wholesale Prices, by Groups of Commodities

	1920— (1913 equals 100)		1921— (No. Decem- ber)		Liqui- dation, Per Cent
	Peak	Decem- ber	1920	1921	
Farm products.....	246	165	114	113	90.1
Food, etc.....	287	195	142	139	79.1
Cloths and clothing....	356	234	186	185	66.8
Fuel and lighting.....	284	258	186	187	52.7
Metals and metal prod- ucts	195	170	119	119	80.0
Building materials.....	341	274	197	203	57.3
Chemicals and drugs....	222	207	162	161	50.0
House-furnishing goods.	371	369	218	218	56.5
Miscellaneous	247	220	145	148	67.3
All commodities.....	272	207	149	149	71.5

In the Field of Labor

The New London Ship & Engine Co., New London, Conn., has received a Government contract that will keep a large part of the plant operating on its present scale during 1922. It is planned to slightly increase the number of employees.

The plants of the General Electric Co., at Bridgeport, Conn., formerly the wartime plant of the Remington Arms Co., have been gradually increasing the working force during the past six or seven weeks until now more than 1500 hands are employed steadily.

In its move toward economy, the Western Maryland Railway, Baltimore, has leased its shops to the man who has been employed as the general foreman. A number of the positions which existed while the shops were operated by the railroad are to be abolished. The men who are retained by the contractor will be hired at a lower wage scale.

Crane Co., Chicago, and Bridgeport, Conn., has reduced the wages of shop forces 12½ per cent. This is the first reduction by Crane Co. from the wartime wages. Its plants are operating at 50 per cent of capacity.

Employees of the Belvidere Screw & Machine Co., Belvidere, Ill., unanimously adopted a resolution on Dec. 31, in support of a protective tariff and the American valuation plan. Copies of the resolution were sent to the United States senators from Illinois as well as to the district representative in Congress.

In the interests of the employees of the Central Region of the Pennsylvania Railroad System the *Pennsylvania News*, a four-page newspaper, has been started. It contains many photographs and feature stories.

HOW LABOR CAN HELP BUSINESS*

Economics of Labor Returns Pointed Out— —Greater Production Helps Everybody

When opening up the Miami mine in Arizona, some 14 years ago, we did the work with the small one-man air-drills. Previous to that time all operating in Arizona had been with the larger drill, requiring two men. The miners objected to this one-man drill, saying that we were throwing one man of every two out of work.

But every time I went underground I impressed upon my men the fact that the material being developed had in the past not been considered ore, because of its low grade; that to make it available it must be mined cheaply; that if two men were put on a drill the material was not pay ore, but that if each man operated his own drill, then the material was pay ore; and that, far from throwing one man of every two out of work, I was finding new places for two.

It did not take very long to sell this idea to them, and in a few months it would have been impossible to get the men back to the use of the old drills requiring two men. Most of the work was done on contract, and each man felt that he got paid for what he did, and was not responsible for a helper who might perhaps not co-operate with him, or in fact might even retard his work.

Among the responsibilities of labor is that of increasing production. Among the unenlightened, the idea that there is a fixed amount of work to be done in the country, and that the less a man does the longer the work lasts and the more men are employed, is of course an economic fallacy held by a great many men. There never was a greater fallacy than this, and the best minds in labor circles realize its fallaciousness. Still, it must not be forgotten that labor has had many sad experiences in the last 80 years, in which the result of increased effort, mental and physical, has not been rewarded as it should have been, but has been entirely appropriated by capital.

We must, however, realize that there is a happy medium. If, for example, the cost of producing any article of vital use to the community is cut in two, or even down to one-tenth of its original cost, it is uneconomic that the laborer or the capitalist, or both, should retain for themselves this entire saving. The proper end is that the selling price of the article be reduced, with a consequent greater consumption and necessary advantage to the consumers as a whole.

Fortunately, competition and the laws of trade to a large extent govern this, but the basic thing to remember is that wages are not paid by money, but by the goods and services rendered by all. The more goods produced and the more services rendered, the more there is for everyone to receive.

Unemployment in British Steel Industry

Except for the tin plate activity in South Wales, it is estimated that the British steel industry is operating at only one-quarter to one-third of normal. In a report of the United States Trade Commissioner, London, to the Department of Commerce, the number of unemployed in the iron, steel and allied engineering trades in various centers includes 61,000 in Newcastle, 40,000 in Middlesbrough, 40,000 in Sheffield, 20,000 in Glasgow, 17,000 in Sunderland. The total is more than 200,000, when Birmingham and Barrow are included; and the number of people involved, including dependents, is probably 1,000,000.

Among those reported as employed, many thousands were working part time, some of them only two days a week. Many of the blast furnaces have been idle since the first day of the coal strike, last April, there being only 70 furnaces in blast at the end of November, as compared with 235 a year previous.

*From an address on Waste in Industry, by J. Parke Channing, at Cleveland, Jan. 18, before national convention of Associated General Contractors.

Machinery Markets and News of the Works

LARGE MEXICAN INQUIRY

National Railways Want to Buy \$300,000 Worth of Machine Tools

Little Prospect of Business Being Closed on Credit Terms Offered—Trade Improving Slowly

An inquiry for \$300,000 worth of machine tools, about 120 items, from the National Railways of Mexico, with offices in the Woolworth Building, New York, has not attracted the attention that might be expected, as the railroad's representatives are seeking to buy on two-year open credit. An effort has been made to place the business with one large machinery company, but the few to which the proposal has been made do not seem anxious to sell on the terms suggested.

In some sections a slightly improved demand for machine tools is in evidence. Activity is more marked in the Central West than in the East. An inquiry for 10 machines, six cranes and six triplex hoists comes from Heaters, Inc., St. Paul, Minn. A Detroit dealer is in the market for several used machines for customers. The Arvac Mfg. Co., Anderson, Ind., manufacturer of universal joints, has bought several drilling machines and is in the market for 18 small turning

lathes and two or three milling machines. The Fisher Body Ohio Co., Cleveland, within the past two or three weeks has added to its equipment of drilling machines and presses. Warren Webster & Co., Camden, N. J., manufacturers of heating apparatus, have bought 10 screw machines, both hand and automatic. An Indiana manufacturer is inquiring for six engine lathes.

Railroad buying is not important, but some orders for single machines are being placed. The Chesapeake & Ohio has issued a new list of several tools. The Illinois Central is preparing a budget of its machine-tool requirements for the next three years and plans to buy a part of the list every six months.

Contractors bidding on the cast iron segments for the New York-New Jersey vehicular tunnel are inquiring for molding machines, one such inquiry asking bids on eight or 10 machines. Other foundries are also in the market for new casting equipment.

Export demand is not active, hence some importance attaches to revived inquiry under consideration by Cincinnati manufacturers for about 15 tools, totaling \$60,000 in value.

The Wheeling Steel Corporation will soon inquire for 10 or 12 cranes, including two 150-ton ladle cranes, for improvements at its Steubenville and Portsmouth, Ohio, works.

New York

NEW YORK, Jan. 24.

The National Railways of Mexico, with New York offices in the Woolworth Building, have sent out an inquiry for about 120 machine tools, entailing an expenditure of \$300,000. There is some doubt, however, as to the business being placed as the Mexican interests desire to buy on open credit terms of two years. An effort is also being made to place the order entirely with one company, but those which have been approached do not appear anxious to book the order on the terms offered. Among the machines inquired for are the following: 42-in. coach wheel lathe, 60-in. horizontal boring machine, two electric cranes, 50-ton capacity, one electric crane, 15-ton capacity, 96-in. vertical boring and turning mill, 60-in. multiple spindle cylinder boring, tapping and milling machine, 50-ton hydraulic bushing press, 42-in. vertical boring and turning mill, 24-in. back-geared shaper, 48-in. single-end vertical punch, 5-ft. radial drill, 42-in. coach wheel lathe, 850-lb. steam hammer, 300-ton hydraulic car wheel press, flue welder, 4-ft. radial drill, pneumatic hoists, car axle lathe, 90-in. locomotive wheel lathe, 400-ton hydraulic car wheel press, and many other items.

Warren Webster & Co., manufacturers of heating apparatus, Camden, N. J., have bought about 10 screw machines, both hand and automatic. Not much new inquiry has come into the market the past week. Inquiries are mostly for single machines and no marked improvement either in inquiries or orders is noted.

No change is reported in the crane market. There is a slight increase of activity in electric and hand power hoists. One manufacturer, who recently placed a new electric hoist on the market has booked orders for about 200 of ½-ton and 1-ton capacities in the past three months. The 40-ton overhead electric crane inquired for by the New York Central & Hudson River Railroad recently will probably be placed soon. Several electric cranes of small capacity are pending. Niles-Bement-Pond Co., has placed two 100-ton electric cranes with a Southern company.

Thomas J. McManus & Sons, 33-35 Moultrie Street, Brooklyn, operating an automobile machine and repair works,

have filed plans for a two-story factory addition, 25 x 100 ft., to cost about \$14,000, exclusive of equipment.

The Lion Brewery, 108th Street and Columbus Avenue, New York, has awarded contract to Cunningham & Foley, Inc., 217 West 116 Street, for additions and improvements in its two-story machine shop, to cost about \$25,000.

The Erie Railroad Co., 50 Church Street, New York, is concluding arrangements with the Youngstown Equipment Co., Youngstown, Ohio, for the operation of its car shops at Kent, Ohio, giving employment, normally, to about 700 men. The road has awarded a contract to the Dickinson Construction & Repair Co., Youngstown, for its maintenance of way work from Salamanca, N. Y., to Marion Ohio, about 400 miles. J. B. Dickson is president of the latter organization.

The U-Need Ice Co., 2150 Amsterdam Avenue, New York, is taking bids for a two-story ice-manufacturing plant, 157 x 214 ft., at Mt. Eden and Inwood avenues, estimated to cost about \$175,000, including machinery. Koch & Wagner, 32 Court Street, Brooklyn, are architects.

The Tunnel Garage, G. L. Stevers, president, 2 Charlton Street, New York, has preliminary plans under way for a new repair and service building at Broome and Thompson streets, to cost about \$75,000.

Charles Cohen, 308-10 Oakland Street, Brooklyn, operating a plant for the manufacture of automobile bodies, has filed plans for a one-story addition, 25 x 100 ft.

The New York Central Railroad Co., Grand Central Terminal, New York, W. C. Bower, purchasing agent, is taking bids until Feb. 3 for a quantity of wire fencing, track bolts, splice bars, frogs, switches, etc.

Merkel Brothers, Sutphin Boulevard, Jamaica, L. I., are having plans prepared for a three-story refrigerating and cold storage plant, 60 x 75 ft., on Chichester Avenue. Louis Allmendinger, 20 Palmetto Street, Brooklyn, is architect.

Mouritz F. Westergren, Inc., 213 East 144th Street, New York, manufacturer of sheet metal products, has awarded a contract to the Cauldwell Wingate Co., 381 Fourth Avenue, for the erection of a two-story plant addition, 28 x 96 ft., estimated to cost approximately \$20,000.

R. Steel & Sons, Inc., 558 West 162d Street, New York, recently incorporated with a capital of \$50,000, to manu-

facture iron and steel products, has filed plans for a one-story machine and forge shop, 50 x 200 ft., on Vernon Avenue, Long Island City.

Louis Fishman, New York, has leased the one-story building on site, 100 x 150 ft., at 140-50 West 145th Street, for an automobile repair and service works.

The K. & O. Co., Inc., 366 Butler Street, Brooklyn, manufacturer of metal products, has commissioned Frank Quimby, 110 William Street, New York, architect, to prepare plans for extensions and improvements in its five-story factory. E. Oldendusch is president.

The Metropolitan Roofing Material Co., 214 East 135th Street, New York, has awarded contract to the Schwab building Co., 223 South Fifth Avenue, Mt. Vernon, N. Y., for a new one-story and basement building on 137th Street.

An electrically operated pumping plant to cost about \$110,000 with machinery is being planned by the city of Orange, N. J., in connection with a trunk sewerage system. Walter L. Hull is city engineer.

The Morse Rogers Steel Co., 1038 South Kolmar Avenue, Chicago, has leased property at the new Shupe Terminal plant, Lincoln Highway and the Passaic River, for an Eastern works. The Martin-Parry Corporation, 560 Jackson Avenue, Long Island City, manufacturer of automobile bodies, with headquarters at York, Pa., has also recently leased a building at this location. The Shupe Terminal Corporation, operating the terminal, will develop the property for industrial service. William F. Shupe, head of the William F. Shupe Co., 85 Day Street, Orange, N. J., is president of the corporation.

The Kelsey Motor Co., 25 Branford Place, Newark, N. J., will soon commence the installation of machinery at the first unit of its new plant on Washington Avenue, Belleville, N. J., for the manufacture of motor trucks and parts. The unit nearing completion approximates 34,000 sq. ft. of floor space and will cost about \$150,000. It will have a capacity of about 3000 cars a year. The company has 7½ acres at this location to provide for additional units.

Thomas L. Raymond, director, Department of Streets and Public Improvements, City Hall, Newark, will receive bids until Jan. 30, for equipment for the repair plant of the department at 9-11 Jay Street, including one electric-driven blacksmith forge, with tuyere iron complete; one electric-driven post drill, with motor; tire bender; nut and bolt cutting machine, with taps, dies and friction countershaft; electric-driven emery machine with two grinding wheels, and motor; 240 lb. blacksmith anvil; one 3-hp. motor. On another specification, the department at the same time will receive bids for a quantity of horseshoe nails and other horseshoe material. Specifications are on file at room 309, City Hall.

Philadelphia

PHILADELPHIA, Jan. 23.

The Pennsylvania Equipment Co., 1420 Chestnut Street, Philadelphia, is in the market for fifteen or twenty Roger convertible ballast cars, center and side dump type, 80,000-lb. capacity.

The Acme Motor Truck Corporation, Philadelphia, has leased the two-story building at 131-33 South Twenty-fourth Street, for a truck repair and service works.

The John T. Lewis & Brothers Co., Lafayette Building, Philadelphia, will soon break ground for a two-story power plant on Aramingo Street, estimated to cost about \$100,000. The Turner Construction Co., 1713 Sansom Street, is contractor.

The Colonial Electric Co., Philadelphia, has leased two floors in the four-story building at 932 Arch Street, totaling about 6000 sq. ft. of floor space, for local works.

The John A. Roebling's Sons Co., Trenton, N. J., manufacturer of wire, cables, etc., will soon commence operations at its addition on Loror Street, now nearing completion. A number of present departments will be transferred to the building and a few additions made to the working force.

The Standard Tank & Seat Co., Camden, N. J., is taking bids for a new building at 320 North Front Street. O. M. Hokanson, Bailey Building, Philadelphia, is architect.

Otto R. Heiligman, receiver for the Winfield Barnes Co., Philadelphia, manufacturer of steel products, has disposed of the plant at Erie Avenue and Twentieth Street to B. Foster and associates for \$86,000. The property consists of a number of buildings on site 241 x 330 ft.

The Lanston Monotype Machine Co., Twenty-fourth and Locust streets, Philadelphia, is perfecting plans for the manufacture of the Barrett adding, listing and calculating

machines, following the recent acquisition of the Barrett Machine Co., 1214 Race Street, Philadelphia.

The Bessemer Motor Truck Co., Grove City, Pa., is arranging for the removal of its works to Holmesburg, Philadelphia, where headquarters in the future will be conducted. The new plant is located on a tract of eighteen acres, and has been designed for a capacity of 3000 motor trucks per year. Additional units will be built when necessary. I. M. Lewis is president of the company.

The Pennsylvania Edison Co., Easton, Pa., has completed plans for a one-story addition to its generating plant, 30 x 56 ft., estimated to cost about \$50,000. It will also erect a two-story shop building, 40 x 64 ft., on Dock Street. A portion of the building, which is estimated to cost about \$35,000, will be used for office service.

Fire, Jan. 18, completely destroyed the plant and machinery of the Boyertown Planing Mill Co., Boyertown, Pa., with loss estimated at about \$50,000. A. P. Griffith is treasurer and general manager.

The Loch & Battista Mfg. Co., Berwick, Pa., manufacturer of flush tanks, is arranging for increased production to total about 1500 tanks per month. Additions will be made to the working force.

The Auto Radiator Service Co., Cameron and Mulberry streets, Harrisburg, Pa., has completed plans for enlargements and work will be placed under way at once. Additional machinery will be installed for sheet-metal working and repair of automobile radiators, fenders, bodies, etc. Edward J. Sherman and Harry W. Hass head the company.

Fire, Jan. 13, destroyed the plant and machinery of the Mercer Flooring Co., Cunningham Street, Mercer, Pa., with loss estimated at about \$150,000.

The Middletown Ice Co., Middletown, Pa., recently organized, has tentative plans under way for a new ice-manufacturing plant. Charles Myers is president and L. J. Borges secretary and treasurer.

The Philadelphia & Reading Coal & Iron Co., Reading Terminal, Philadelphia, is planning for an addition to the power house at its Locust Spring colliery, to double the present capacity.

New England

BOSTON, Jan. 23.

Machine-tool prospects of any importance whatever are developing slowly. Companies having purchases of equipment under consideration apparently are no nearer closing than they were a week ago. Unless the unexpected happens, bookings by New England dealers for January will fall considerably below predictions made early in the month. During the past week there has been more or less interest shown in equipment by small manufacturers, who are governed more by price than by requirements of machines, and shopping by these interests is carried to extremes, especially in the used machine tool market.

Sales the past week disclose a further shrinkage in volume of turnover and cash. They include a 3½-ft. radial drill to a Massachusetts maker of textile machinery; special production machinery to a Portland, Me., manufacturer of marine hardware; small grinding equipment to the American Steel & Wire Co., Worcester, a No. 2 Pratt & Whitney die sinker to a Rhode Island manufacturer; a 13-in. x 5-ft. lathe, to a Worcester manufacturer of musical instruments; 16-in. x 12-ft. lathe to a textile machinery interest, and a 20-in. upright drill and tool grinder to a Medford, Mass. garage, all new machinery; a four-spindle Prentice sensitive drill to a Middleboro manufacturer; special lathe for crankshaft turning, to a Waltham automobile manufacturer; and four small milling machines to a local maker of fountain pens, the last six pieces of equipment selling out of the used tool market. A limited list of light equipment for a small experimental shop to be started in Massachusetts, and a cutting off machine for the General Electric Co., Pittsfield, are the only new prospects in sight.

Dealers in new equipment have developed some prospects, however, but because such business is not competitive little in the way of detail is forthcoming. They deal largely with special production equipment and drilling machines. The same firms admit that lathe prospects which looked promising earlier in the month, have been placed in the doubtful files. A few individual firms report a better demand for hand tools, notably portable electric drills.

Several New England builders of machine tools, to keep plants operating at the highest ratio during the present depression, have gone or are going into the manufacture of new lines, such as a level for truing up machine tools, portable drills, testing cylinder gage, small grinding machines, wood-working machinery, and one company is about to turn

over a large part of its plant to the manufacture of spinning machinery, the order for which runs close to \$1,000,000. The development of new machine tools is not neglected in the meantime, however. During the past few months New England makers have turned out many newly designed tools and 1922 promises other machinery developments. Makers of railroad shop tools in this section have secured sufficient business to warrant increased activities, but operating schedules are still far below normal.

At the moment a decided improvement in the demand for gears is noted. Manufacturers of Maag gears have put out more quotations the past ten days than in a long time. The interest shown by makers of rolling mills and users is especially good. One local gear maker has about all the business he can handle, and many other Massachusetts companies are doing much better than a month ago. Small gears are not only wanted for new machinery, but for replacements as well. One gear maker in this section recently was obliged to buy new metal-working equipment.

The Segal Metal Products Co., Springdale, Conn. has awarded contract for a manufacturing unit.

The foundry of White & Warner Co., Tremont Street, Taunton, Mass. recently was damaged by fire with an estimated loss of \$50,000.

The Stamford Rolling Mills Co., Springdale, Conn., has sent out inquiries for complete oil engine power equipment with electrical generators for its two mills at Stamford and Springdale, Conn. Each power house will be approximately 2500 hp. and will supply motors on a rolling mill load, which are now installed. C. F. Hunter is general purchasing agent.

A vocational department will be installed in the new three-story high school, 70 x 188 ft., now being erected at Manchester, N. H., and estimated to cost in excess of \$900,000. C. F. Whitchee, 814 Elm Street, Manchester, is architect; R. D. Kimball, 6 Beacon Street, Boston, is engineer.

Walter W. Field, 39 Hayward Street, Cambridge, Mass., has filed plans for rebuilding the portion of his machine shop recently destroyed by fire. The work, exclusive of equipment, will cost about \$10,000.

The E-Z Fold Ironing Table Co., Westboro, Mass., recently organized, has taken over the former plant of the Forbes Sleigh Co., Summer Street, and will operate at this location. George W. Lewis heads the company.

A vocational department will be installed in the new two-story high school, 225 x 245 ft., to be erected by the Town School Board, Stratford, Conn., estimated to cost about \$450,000. Frank Irving Cooper Corporation, 172 Tremont Street, Boston, is architect.

A vocational department will be installed in the new junior high school to be erected at Westville, Conn., to cost about \$200,000. H. M. Greist, of the Greist Mfg. Co., is chairman of the building committee; Brown & Von Beren, 185 Church Street, New Haven, Conn., are architects.

The Waterbury Mfg. Co., 236 Grand Street, Waterbury, Conn., manufacturer of sheet brass goods, etc., recently purchased a factory on College Street, Middletown, Conn., from William E. Stroud. It is 50 x 102 ft. and will be used for the manufacture of its products. An addition is contemplated later.

A vocational department is planned for the new high school to be erected at Belchertown, Mass. The architect has not yet been selected but sketches have been submitted. Wilbur F. Nichols is chairman of the building committee.

Cleveland

CLEVELAND, Jan. 23.

The proposed New York-New Jersey vehicle tunnel has brought out inquiries for eight or ten large molding machines from foundries planning to bid on the cast iron segments, and a fair volume of inquiry for molding machines has come out this month from other foundries engaged in work outside of the automotive field, making the outlook in molding machine lines much better than it was late last year.

The machine tool market shows improvement in the number of inquiries, but orders have not increased, as prospective purchasers are very slow in closing deals. The Fisher Body Ohio Co. is adding equipment to its Cleveland plant, having placed several small orders for drilling machines and presses, aggregating about a dozen tools, in the past few weeks. The Arvac Mfg. Co., Anderson, Ind., maker of universal joints, has purchased several drilling machines and has inquiries out for 18 turret lathes, 18 small turning lathes and two or three milling machines. The machinery equipment of the American Ball Bearing plant, Cleveland, of the Standard Parts Co., will be sold at auction Jan. 26. It is stated that this is attracting little interest, as practically all the machines that were in fair condition have been sold.

The demand for locomotive cranes shows no change over the past few months. Makers are getting a few single machine orders both for export and domestic use.

The Rose Machine & Spring Co., Canton, Ohio, formerly the Buckeye Machine & Spring Co., has been incorporated with a capital stock of \$50,000. D. H. Rose, who has operated the plant of the Buckeye company for several years, will be head of the new company.

The Miami Tractor Co., Celina, Ohio, recently organized, is planning to add a foundry and other extensions to its present plant. It will have a capital stock of \$2,600,000, of which \$1,500,000 will be preferred stock. V. A. Conover is president.

The main building of the plant of the Glass & Machine Works, Jewett, Ohio, was burned recently. It is stated that it may not be re-built.

The Ohio Structural Steel Co. has established a plant at Newton Falls, Ohio. M. H. Stauffer, formerly with the Niles Forge & Mfg. Co., Niles, Ohio, is president and general manager.

The Steel City Iron Co., Youngstown, Ohio, is being organized with a capital stock of \$150,000 by A. W. Lau, formerly of the Lau Iron Works, and others. It contemplates establishing a plant for fabricating general structural work and ornamental iron work.

The Nichols-Lintern Co., 8404 Lorain Avenue, Cleveland, manufacturer of railroad equipment, has awarded a contract to the Austin Co., 16112 Euclid Avenue, for a one-story addition, 60 x 65 ft., estimated to cost about \$65,000.

The Stahl Auto Body & Wagon Co., 6533 St. Clair Avenue, Cleveland, manufacturer of automobile bodies, is having plans prepared for an addition, including improvements in present buildings, estimated to cost about \$40,000.

The Glenwood Motor Car Co., East Seventy-first Street and Euclid Avenue, Cleveland, is completing plans for the erection of a new one-story plant at Findlay, Ohio, 90 x 570 ft. J. B. Cline is president.

The K. W. Brick Co., 607 Home Savings & Loan Building, Youngstown, is completing plans for a one and two-story brick and tile manufacturing plant at Warren, Ohio, 70 x 150 ft., estimated to cost close to \$40,000. J. Whittaker is president.

Baltimore

BALTIMORE, JAN. 23.

The Spanish-American Cork Co., Westport, near Baltimore, has plans under way for rebuilding the portion of its plant on the Fish House Road, recently destroyed by fire. It is estimated to cost about \$45,000. O. J. Harms is president.

The Board of Awards, City Hall, Baltimore, will take bids until Feb. 1 for furnishing and erecting two 2,000,000-gal. electrically operated centrifugal pumps, with electrical equipment, for the Belair Road pumping station. William A. Megraw is engineer, and William F. Broening is president of the Board of Awards.

The Board of Education, Baltimore, has acquired 14 acres between West Forest Park and Arlington for a new senior-junior co-educational high school, to include vocational department. Plans will be prepared by Parker, Thomas & Rice, Union Trust Building, Baltimore. It will cost in excess of \$500,000.

The Friedman Ice & Cold Storage Co., Savannah, Ga., is completing plans for rebuilding its ice-manufacturing and cold storage plant, recently destroyed by fire. It will cost about \$50,000. S. Friedman is president.

Fred Foster, Radford, Va., has plans under way for a new one-story machine shop.

Fire, Jan. 14, destroyed a portion of the woodworking plant of the A. T. Griffin Mfg. Co., Goldsboro, N. C., with loss estimated at about \$50,000, including machinery.

The Universal Service Station, Front Royal, Va., is planning the establishment of a one-story machine shop for automobile repair work and parts manufacture.

The Brunswick Cross Arm Co., Brunswick, Ga., P. N. Coleman, Box 167, president, is contemplating the immediate erection of a new plant, 80 x 210 ft., to replace its works recently destroyed by fire. Equipment to be installed includes boring machines, band resaws, edgers, files, planers and other wood-working machinery.

The Tyler Machine Co., Florence, S. C., is planning to rebuild its machine shop, recently destroyed by fire. L. Tyler heads the company.

F. E. Hatch, Albany, Ga., has acquired a site at the Bank's mill pond, Milledgeville, Ga., for a new hydroelectric generating plant.

A vocational department will be installed in the new

high school to be erected at High Point, N. C. A bond issue of \$750,000 is being arranged.

D. C. Elphinstone, 408 Continental Building, Baltimore, is making inquiries for an auto crane, caterpillar or road wheel type.

Lyon, Conklin & Co., 13 Balderstone Street, Baltimore, manufacturer of sheet metal products, will break ground in the spring for its new four-story plant at McComas and Donaldson streets, 66 x 75 ft., and estimated to cost \$350,000, including machinery. George B. Monmonier & Son, 1711 McCulloch Street, have the building contract.

The Alexander Granite & Land Co., Statesville, N. C., is planning for the operation of a rock quarry in the vicinity of Hiddenite, N. C., and will install an electrically operated crushing plant. J. M. Deaton is president.

A vocational department will be installed in the new high school to be erected at Southport, N. C., bids for which are being asked. W. J. Wilkins & Co., Wilmington, N. C., are architects.

The American Furniture Co., Martinsville, Va., is perfecting plans for a new power house, estimated to cost \$50,000. A. D. Witten is engineer.

The School Board, Rockingham, N. C., is planning for the erection of a new high school to cost close to \$100,000. A vocational department will be installed.

Fire, Jan. 8, destroyed the machine and repair department, and adjoining sections of the automobile works of George C. White & Sons, Richmond, Va., with loss estimated at about \$50,000.

The Gulf Refining Co., Pittsburgh, Pa., is contemplating the construction of a steel tankage plant on Hutchinson Island, Savannah, Ga., to have a capacity of about 55,000 bbls., and estimated to cost approximately \$100,000.

The Lock Joint Pipe Co., Baltimore, has leased a site for a plant to manufacture pipe. A. M. Hirsh is president.

The Parker Metal Decorating Co., North Gay Street, Baltimore, whose factory was recently damaged by fire, is said to be arranging to locate at the plant formerly occupied by the Union Smelting & Refining Co., Inc. Howard and Ostend streets, where an addition will be erected. E. A. Parker is president.

The American Wood-working Corporation, 5 Uhler Street, Baltimore, will build a three-story addition, increasing the floor space to 35,000 sq. ft. Additional equipment will be installed. Arthur Pierson is president.

Hackney Brothers, Wilson, N. C., manufacturers of carriages will rebuild their burned plant and install new equipment.

The Maryland Steel Rolling Co., Fidelity Building, Baltimore, will build a one-story factory, 66 x 228 ft., to cost \$10,000.

Cincinnati

CINCINNATI, JAN. 23.

Chief interest in the machine tool market the past week, centered in the revival of an inquiry for 15 tools, valued at approximately \$60,000 for shipment to Japan. This inquiry was put out last summer, but has since been revised and heavier types of machines specified. It is expected that the order will be placed within the next two weeks. An Indiana manufacturer is in the market for six lathes and the Chesapeake & Ohio Railroad has also issued a list for several tools. Orders booked the past week were usually for single machines but in larger number than the previous week and manufacturers are more encouraged as a result. Used machinery dealers report business as only fair.

Frank P. Shaw, Chicago, representative of an unnamed automobile concern, was the highest bidder for the plants and equipment of the Allen Motor Car Co., in Columbus and Bucyrus. Mr. Shaw's bid was \$570,000 and it will likely be accepted. It is understood that as soon as the deal is closed, operations will be resumed at the Allen plants.

The Dayton Malleable Iron Co., Dayton, Ohio, which recently purchased the plant of the Timkin Detroit Axle Co., Canton, Ohio, has closed a contract with the Timkin company for its entire malleable iron castings requirements. The Dayton company will take control of the Canton plant on Feb. 1 and will operate it for automobile and railroad work.

The Ramey Mfg. Co., Columbus, Ohio, manufacturer of electric cleaners, saw mill blowers and furnaces, has taken a long term lease on the Immel Auto Body plant, 8 East Livingston Avenue and is making alterations preparatory to establishing headquarters there by Feb. 15. The company expects to largely increase its output of furnaces and will practically double the force employed. E. J. Ramey is president.

The City of Corbin, Ky., is receiving bids on \$60,000 worth of light and water bonds and is planning to build a municipal light and water plant. John C. Myers is city clerk.

The City Commissioners of Newport, Ky., have passed an ordinance providing for the issuance of \$150,000 in bonds for installing a new pump at the waterworks plant to supply a minimum of 6,000,000 gal. of water daily. Mayor J. H. Hermann is chairman of the commission.

William Gilbert, president, Buckeye Foundry Co., Cincinnati, has acquired the controlling interest in the Bollman-Wilson Foundry Co., 500 East Front Street. It is the intention later to make alterations and additions.

Pittsburgh

PITTSBURGH, JAN. 23.

Machinery activities have been even more limited the past week, both sales and inquiries having dwindled. The Brown-Zortman Machinery Co. has sold two 34-in. boring machines to the Erie Ball Engine Co., Erie, Pa. This constitutes the most important business of the week, although most dealers and agencies are getting occasional orders for individual tools, which not infrequently are shipped out of stock. The railroads still are out of the market and outside of the Wheeling Steel Corporation, most of the inquiries emanating from steel companies seem to be either finding out present prices against old projects or for estimating purposes in connection with the asking of appropriations. The Wheeling Steel Corporation, which is to spend about \$5,000,000 on plant extensions and improvements at its Steubenville and Portsmouth, Ohio, works and which recently closed for much mill equipment, is expected to shortly take bids on 10 or 12 cranes, including two 150-ton ladle cranes for the Steubenville plant, and later for the lighter machinery. This business, however, is prospective and current trading in both light and heavy machinery is small. The United Engineering & Foundry Co. has not yet closed for a 10-ton crane with 5-ton auxiliary, although an award is looked for soon. Neither the Ellwood City Forge Co. nor the Elliott Co. seem to be in a hurry to close on the cranes they inquired for sometime ago. Competition for orders is so sharp that prices approximating those of pre-war times now are being made and salesmen report that buyers are taking advantage of this.

The Westinghouse Electric & Mfg. Co., East Pittsburgh, has taken bids for a four-story addition, 100 x 200 ft., at Lang and Susquehanna streets, Homewood section. Bernard H. Prack, Keystone Building, is architect.

The Thermatomic Carbon Co., Pittsburgh, a new organization, is arranging for the construction of a plant in the vicinity of Sterlington, La., and has secured a site. It is headed by R. H. Uhlinger, 3612 Bates Street, Pittsburgh.

The W. H. Smith & Sons Co., Johnstown, Pa., will install new lathes, planers, bandsaws, grinding machines, morticing machines and other woodworking equipment at its new plant, now in course of erection. It will replace a mill recently destroyed by fire.

A ventilating system to cost about \$500,000, including mechanical fans, blowers, etc., will be installed by the County officials, Pittsburgh, in connection with the Liberty twin tubes now being constructed through the South Hills. The County Engineering Department is in charge.

A vocational department will be installed in the new two-story high school, 75 x 110 ft., to be erected at Harrisville, W. Va. S. W. Ford, Clarksburg, W. Va., is architect. S. O. Prunty is president of the Board.

The Kanawha Equipment Co., Charleston, W. Va., is making inquiries for a 30 to 40-hp. locomotive type marine boiler for river boat service.

The Guyan Machine Shops, Logan, W. Va., are planning for the installation of new pulleys, belting and other transmission equipment.

The Stonecrete Corporation, 6023 Pennsylvania Avenue, Pittsburgh, has completed plans for a machine shop in connection with its new two-story plant at Cheswick, Pa.

The Wheeling Motors Corporation, Wheeling, W. Va., is planning for a two-story machine shop, 40 x 50 ft., estimated to cost about \$22,000. M. B. Morgan is head.

The American Car & Foundry Co., 165 Broadway, New York, has preliminary plans under way for additions to its works on Third Street, Huntington, W. Va., estimated to cost in excess of \$350,000. A new car shop will be built at a cost of about \$150,000, including equipment. J. W. Ensign is district manager at Huntington.

The Raleigh-Wyoming Coal Co., Professional Building, Charleston, W. Va., will build a new one-story machine shop at its properties, vicinity of Glen Rogers, W. Va. A

new railroad ceiling department, stand pipe and other structures will be erected. G. T. Harris is secretary and treasurer.

The new ice-manufacturing plant to be constructed by the Diamond Ice & Coal Co., 912 Bullit Street, Charleston, W. Va., will cost in excess of \$100,000, instead of about one-half this amount. It will be two-stories, 100 x 100 ft. Plans are being completed by A. C. Bishop, 427 Guardian Building, Cleveland, architect and engineer, and work will commence at an early date.

The Northwestern Coal Co., Keyser, W. Va., recently organized, is planning for the installation of electrically operated mining machinery at its local properties. C. W. Siener is president, and George Wagener, vice-president and general manager.

Buffalo

BUFFALO, Jan. 23.

The Binghamton Heat, Light & Power Co., Binghamton, N. Y., has been granted permission to construct and operate a new electric light and power plant.

The Board of Education, Buffalo, is conferring with the City Council for the adoption of an intermediate trade school program, providing for an appropriation of \$10,000,000 for the erection and equipping of a number of trade and vocational schools.

The Johnson City Motor Car Co., Johnson City, N. Y., has rejected all bids for its proposed one-story service and repair works, 72 x 115 ft., and will call for new bids later. Charles A. Conrad, Phelps Building, Binghamton, N. Y., is architect.

The Merchants Dispatch Transportation Co., East Rochester, N. Y., has completed plans for a new one-story plant, 80 x 560 ft., for the manufacture of railroad equipment. L. F. West is in charge.

The Wiggler Corporation, Buffalo, recently incorporated with a capital of \$50,000 to manufacture signal devices, has established an assembling plant at 2355 Main Street, with daily capacity of about 3000 signals.

Chicago

CHICAGO, Jan. 23.

The improvement in buying which became apparent early this year, has been sustained. Purchases of single machines predominate and it is notable that buyers are looking for bargains, with the result that they often show a preference for used machinery. Current auction sales are well attended and most of the equipment offered is disposed of. During the past week two local sales were held, one at the plant of the Isko Co., manufacturer of refrigerating machinery, and the other at the factory of Knisley Brothers, manufacturer of cornices, fire proof sashes, metallic window frames, etc. Relatively better prices were obtained at the latter sale, because the equipment offered consisted of sheet metal-working machinery, including large bending brakes, punch presses, shears, etc., offerings of which are less frequent than of standard types of machine tools.

The railroads have made no further purchases of machine tools, but have closed for a considerable quantity of miscellaneous shop supplies. The Illinois Central is preparing a large budget covering its machine tool requirements for three years, a program which will call for purchases about twice a year during that period. The Santa Fe has put out an inquiry for two Hisey-Wolf Machine Co. combination internal and parallel grinding machines, type 3 B X D, with one-half horse-power motors arranged either for 220-volt direct current, or 116-volt single phase 60-cycle alternating current.

An encouraging number of inquiries are coming from miscellaneous sources. Heaters, Inc., 1927 Dayton Avenue, St. Paul, Minn., has put out the following list:

- One hydraulic pump for press 200 ton pressure.
- One 10-in. x 10-in. air compressor, belt drive.
- One 24-in. to 30-in. throat punch, capacity $\frac{3}{4}$ -in. in $\frac{3}{4}$ -in.
- One 4-ft. to 6-ft. squaring shear for eight-gage stock.
- One Hanna bull riveter, 76-in. throat, 30 to 70 tons.
- One bevel shear.
- One power roll for six gage, 7-ft. long.
- One light power punch, any throat.
- One angle roll.
- One rotary shear, throatless preferred.
- Six under-hung cranes, with trolleys, 4-ft. high x 10-ft. to 4-ft. reach.
- Six one-ton triplex hoists.

The H. Mueller Mfg. Co., Decatur, Ill., manufacturer of water plumbing and gas brass goods, desires circulars on

drill presses, especially 12-spindle machines for $\frac{3}{4}$ -in. hole and 12-in. diameter circle.

D. E. Morand, machinery dealer, Detroit, is in the market for the following machines for which he has prospective customers:

Three blanking presses, with 6 to 8-in. stroke, 30 to 40-in. wide, 12 to 14-in. height of die space; one single-action press, 7 ft. between uprights, 35 in. depth of ram, 10-in. stroke, 20 in. height of die space; one 50-in. gap press, 4 or 5-in. stroke, 15 to 20-in. depth of ram, similar to "25B" Bliss press; one open-side press similar to Bliss 22; one knuckle joint No. 663 Toledo press. The Pioneer Mfg. Co., Waterloo, Iowa, manufacturer of concrete pipe machines is in the market for a used square or rotary shear for cutting sheet metal. The Standard Automatic Parts Co., Muskegon, Mich., manufacturer of valve and tappet guides, is in the market for a used Pratt & Whitney 6 x 14-in. threadmill.

Two further price changes are reported. The Valley City Machine Works, Grand Rapids, Mich., has reduced milling machines 10 per cent. The Loshbough-Jordan Tool & Machine Co., Elkhart, Ind., has made a reduction of 10 per cent on punch presses, effective Feb. 1.

Edwin Schultz has purchased the interest of Earl H. Renn in the Renn & Schultz machine shop, on South Main Street, Belvidere, Ill.

Plans will soon be completed for a manual arts building, to be added to the Ashland High School, Ashland, Wis. The addition was made possible by the will of the late Charles F. Latimer of that city, who set aside \$50,000 for the purpose.

The McLough Foundry & Machine Co., Marine City, Mich., an institution hardly three months old, is now running at full capacity with a force of 40 men. It is manufacturing automobile pistons.

The Fanyo Garage, Watseka, Ill., was destroyed by fire on Jan. 11, with a loss estimated at from \$60,000 to \$75,000.

The Central Cornice Co., 107 North Twenty-ninth Street, Billings, Mont., manufacturer of ventilating systems, skylights, metal flumes, cornice work, etc., has secured a site on Montana Avenue between North Twenty-ninth and Thirtieth Streets, for a new plant 25 x 130 ft.

Bids are being received by the city engineer of Centralia, Ill. on a new power house.

The Niagara Radiator & Boiler Co., Tonawanda, N. Y., has let contract for a one-story foundry and machine shop, 140 x 175-ft. at 1101 to 1113 East Eighty-third Street, Chicago, to cost \$150,000. A four-story warehouse to cost \$100,000 will be built later. Clark & Walcott, 8 East Huron Street, Chicago, are associate architects in charge of the design of the plant and the Sumner Solitt Co., 225 North Michigan Avenue, has the contract.

The Western Instrument Co., 1001 Washington Boulevard, Chicago, recently incorporated to manufacture surgical, veterinary, dental and electrical instruments, dies, tools and patterns and to do brass finishing, polishing and plating, has acquired 8000 sq. ft. of factory space at the address given and will require the following equipment: Ten hand screw machines, eight punch presses, eight milling machines, 12 drill presses, and 10 speed lathes. The officers include William Ganschow, president; Julius Severus, vice-president and general manager; Charles F. Johnson, secretary and Louis D. Mahon, treasurer.

The Dependable Mfg. Co., Streator, Ill., has taken over the plant and business of the Gahm-McCormick Co., and will manufacture automobile accessories, including spring steel bumpers, oscillating sedan seats, front splash aprons, radiator supports, and rear fittings. Incorporators include C. A. McCormick, M. E. McCormick and W. H. McCormick.

A group of Southern lumbermen, whose identity has not been disclosed has purchased 38 acres as the site for a \$250,000 plant for the construction and repair of freight cars. The tract lies between Forty-eighth and Fifty-second avenues and the west fork of the south Branch of the Chicago River. In the negotiations James N. Litsey, Chicago, represented the purchasers and title was taken by the Greenebaum Sons Bank & Trust Co. as trustee.

A vocational department will be installed in the new North high school to be erected at Omaha, Neb., and estimated to cost \$750,000. John Latenser & Sons, Peters Trust Building, are architects. W. T. Bourke, 603 City Hall is secretary.

Frank D. Chase, Inc., 646 North Michigan Avenue, Chicago, engineer, has construction under way on a new one-story and basement foundry at Cadillac, Mich., 87 x 100 ft., estimated to cost \$150,000, including equipment. It will be owned and occupied by a new company being organized by R. J. Teetor of the Mitchell Digging Iron Co., Cadillac.

The American Car & Foundry Co., West Twenty-fourth

and South Paulina Streets, Chicago, has tentative plans under way for an addition for the construction of steel cars. The site requires filling in and eliminating a slip now used for docking purposes. An application for permission to carry out this feature of the work is said to have been refused and the company proposes to seek another site, possibly outside of Chicago.

The City Council, Boone, Iowa, has directed the early completion of plans for the proposed municipal hydroelectric generating plant on the Des Moines River, estimated to cost in excess of \$100,000. Burns & McDonnell, 402 Interstate Building, Kansas City, Mo., are consulting engineers.

The Board of Education, Clarinda, Iowa, Homer S. Stephens, secretary, is taking bids until Feb. 3, for a new two-story and basement high school, to include a vocational department, estimated to cost about \$200,000. Keffer & Jones, 204 Masonic Temple, Des Moines, Iowa, are architects.

The Central South

ST. LOUIS, JAN. 23.

The Stafford Motor Works, Twenty-second and Campbell streets, Kansas City, Mo., has awarded contract to Harvey Silver, Shubert Building, for a one and two-story machine shop, 65 x 130 ft., estimated to cost about \$27,000. R. A. Curtis, 536 Lee Building, is architect.

The G. G. Hoffman Magneto Co., 3932 Olive Street, St. Louis, is having plans prepared for a new one-story works, 100 x 234 ft., at 3892 Washington Street, estimated to cost about \$50,000. E. Lantz, 600 Post Dispatch Building, is architect.

The Board of Education, Library Building, Kansas City, Mo., will call for bids in February for a four-story addition to the manual training high school at Fifteenth and Forest avenues, 111 x 115 ft. C. A. Smith, 602 Finance Building, is architect; J. A. Brady, Library Building, is mechanical engineer, and J. B. Jackson, secretary of the Board.

The Dixie Coal, Lime & Clay Products Co., Dayton, Tenn., recently organized with a capital of \$750,000, is contemplating the construction of an electric power plant and electrically-operated pumping plant at Graysville, Tenn. It has plans in preparation for the establishment of a brick and tile manufacturing plant, with initial capacity of about 50,000 brick per day. A 50-ton hydrate lime manufacturing plant will also be built. O. E. Thomas is president and manager, and Fred A. Brian, vice-president.

The Rock Asphalt Building Block Co., 638 Stahlman Building, Nashville, Tenn., is arranging for the installation of new equipment at its plant to include a gyratory crusher of about 150 tons daily capacity; revolving screen, 40 in. by 16 ft.; pulverizing machinery, friction hoist, elevators, transmission and other machinery. A. J. Bright is chief engineer in charge.

The American Cornice Works, 237 North Water Street, Wichita, Kan., is planning for the erection of a one-story and basement addition, 25 x 140 ft.

A vocational department will be installed in the three-story high school, 90 x 129 ft., to be erected at Humboldt, Kan., estimated to cost about \$125,000. T. W. Williamson & Co., 312 Central Bank Building, Topeka, Kan., are architects. W. A. Redfield is clerk.

The Hurricane Light & Power Co., Waverly, Tenn., has plans under way for a new hydroelectric generating plant with initial capacity of about 1500 hp., to be increased later to 5000 hp. The company was organized recently with a capital of \$1,000,000. E. T. Stanfield and Roy Carter are heads, both of Little Rock, Ark. The first noted will act as engineer.

The Keethler Quarries Co., Fayetteville, Tenn., is planning for the installation of new equipment, including a gyratory crusher, with daily capacity of about 150 tons; jaw crusher of 100 tons capacity; pulverizing equipment; conveying machinery, etc. T. Keethler heads the company.

A vocational department will be installed in the two-story and basement high school, 125 x 130 ft., to be erected at Lexington Ky., and estimated to cost \$175,000. The Frankel-Curtis Co., Ben All Theatre Building, is architect. J. C. H. Simrall, McClelland Building, is clerk of the Board.

Brown & Moore, Camden, Ark., will build a new one-story factory to manufacture spokes for automobile wheels. Plans have been completed.

The Signal Mountain Portland Cement Co., James Building, Chattanooga, Tenn., will commence work in March for a new plant in this vicinity, estimated to cost in excess of \$500,000. J. L. Senior is president.

The Board of Trustees, University of Missouri, Columbia, Mo., will soon take bids for its one-story and basement

power plant, 50 x 200 ft., estimated to cost about \$250,000 complete. James P. Jamieson, Security Building, St. Louis, is architect.

The Process Refining Co., Oklahoma City, Okla., recently organized, has acquired the oil refinery of the Pirtle-Pittman Refining Co., Newkirk, Okla., and will take immediate possession. A number of improvements will be made, including the installation of new machinery. A. C. Heiden is vice-president, and C. H. Hyde, secretary, treasurer and superintendent.

A vocational department will be installed in the three-story junior high school to be erected at Maplewood, Mo., estimated to cost about \$160,000. Bids will be asked in the spring. William B. Ittner, Board of Education Building, St. Louis, is architect.

The Klein Motor Co., 949 South Third Street, Louisville is planning to rebuild its machine repair and service works, recently destroyed by fire with loss estimated at about \$50,000, including equipment.

A one-story power house will be installed in the new six-story service building to be erected by the Missouri Athletic Association, 407 Washington Avenue, St. Louis, estimated to cost about \$150,000. W. C. Boering is president. G. F. A. Bruggeman, Liberty Central Bank Building, is architect.

The Polar Wave Ice & Fuel Co., Grand and Olive streets, St. Louis, has foundation work under way for its new two and three-story ice-manufacturing plant on Gravois Street, estimated to cost approximately \$500,000 with machinery. H. S. Clymer, Wainwright Building, is architect.

The Muskogee Sand & Gravel Co., 805 Barnes Building, Muskogee, Okla., recently organized, is planning for the construction of a sand and gravel producing plant on property in this section, lately acquired. The installation will comprise crushing and screening machinery, stiff leg derrick, clam shell conveying equipment, hoists, cars, oil-operated engine and other power and operating equipment. O. M. Drake is vice-president and manager.

The Cumberland & Manchester Railroad Co., Barbourville, Ky., is planning for enlargements in its car and locomotive shops. Additional equipment will be installed. Charles F. Heidrick is general manager.

The Belknap Hardware & Mfg. Co., Second and Washington streets, Louisville, is taking bids until Jan. 30, for its proposed addition, 204 x 285 ft., estimated to cost about \$1,000,000. Graham, Anderson, Probst & White, Railway Exchange Building, Chicago, are architects. William Heybourn is president.

Detroit

DETROIT, JAN. 23.

The Bradt Wheel Co., Pontiac, Mich., which will manufacture disk wheels and demountable rims for motor cars, has been organized by Harold Bradt, Rochester, Mich., and is seeking a temporary building. Associated with Mr. Bradt are P. C. Raymond, Rochester, and T. B. Leland, Detroit.

The Simplex Ignition System Co., Chicago, is seeking a site in Marine City, Mich., for the erection of a factory.

The Crodious Steam Pressed Brick Co., Pontiac, Mich., is planning the construction of a new plant.

The Crary-Granzow Machine Co., Benton Harbor, Mich., is contemplating the erection of an addition.

Bernard and E. R. Stroh, have organized the Stroluminum Co., Detroit, to manufacture molded aluminum cooking utensils. It is an outgrowth of the Stroh Castings Co., maker of automobile parts and manufacturing will be done in the casting plant on Chene Street. William Roe, general manager Stroh Castings Co., will have charge of production, with Bernard and E. R. Stroh in executive capacity.

Henry Ford has bought the mill site and water rights at Pinckney, Mich., and his engineers are preparing for the construction of a plant at that place.

The Auto Specialties Mfg. Co., St. Joseph, Mich., will build a \$150,000 addition, construction to begin within 30 days. It will give the company 65,000 additional sq. ft. of space.

Construction has been started on the new boiler room of the Mac Sim Bar Paper Co., Otsego, Mich. It will be 60 x 136 ft. and 79 feet from basement to roof, and when completed will represent an expenditure of about \$300,000, including equipment.

The American Furnace & Foundry Co., Milan, Mich., is contemplating an addition to its factory to care for increased business.

A. F. Lavine & Sons, Dayton, Ohio, have purchased the plant and business of the Bay City Spring & Mattress Co. A new building will be erected.

The University of Michigan, Ann Arbor, Mich., S. W. Smith, secretary, will call for bids in the spring for engineering and mechanical shops and laboratories, estimated to cost about \$750,000, including equipment. Smith, Hinchman & Grylls, Washington Arcade Building, Detroit, are architects.

The Lincoln Mfg. Co., 2630 Erskine Street, Detroit, manufacturer of electric lighting fixtures and parts, has work under way on a three-story addition, 30 x 115 ft., estimated to cost about \$100,000, including equipment. Upon completion, the company will extend its line and expects to double the present output. Robert S. Aspinwall is president.

A vocational department will be installed in the new high school to be erected at Albion, Mich., estimated to cost about \$150,000. R. A. LeRoy, 102 Pratt Building, Kalamazoo, Mich., is architect. Donald Harrington is school superintendent.

The Peoples Coal Mining Co., Albion, Mich., recently organized with a capital of \$350,000 to take over the Albion Mining Co., operating coal mines in this section, will electrify the entire property. A new tippie will be constructed, and hoists, pumping machinery and other operating equipment installed.

Bids have been received by the Electric Light and Water Board, Lansing, Mich., for a new municipal power plant. The Walbridge-Aldinger Co., Detroit, was low bidder at \$1,084,305.

Indiana

INDIANAPOLIS, JAN. 23

A vocational department will be installed in the new two-story high school, 170 x 215 ft., to be erected at Marion, Ind., estimated to cost about \$300,000. H. G. Bowstead, 410 Glass Building, is architect.

The Mid West Metal Products Co., Munsie, Ind., has consolidated the manufacturing department of the Kruse Electric Co., Fort Wayne, Ind., at its local works, following the recent acquisition of this branch of the Kruse business.

Fire, Jan. 13, destroyed the power house at the Little Giant Coal Mining Co., property, Linton field, near Terre Haute, Ind. It will be rebuilt.

A vocational department will be installed in the new two-story and basement high school, 55 x 125 ft., to be erected at Butler, Ind., estimated to cost about \$100,000. A. H. Elwood & Son, 201 Haynes Building, Elkhart, Ind., architects, are taking bids until Feb. 2.

The Indianapolis & Cincinnati Traction Co., Germania Building, Indianapolis, has tentative plans under way for the construction of a new one-story machine shop at Cincinnati, estimated to cost about \$60,000.

The Bloomington Nash Motor Co., Bloomington, Ind., has had plans prepared for a two-story and basement service and repair works, 85 x 130 ft., estimated to cost about \$80,000. Walter E. Hottle is head.

A vocational department will be installed in the new high school to be erected at Cayuga, Ind., two-stories and basement, and estimated to cost about \$900,000. The Board of Trustees, Eugene Township, Cayuga, is in charge. John Miller, 30 North Fourth Street, Terre Haute, Ind., is architect.

The Gulf States

BIRMINGHAM, JAN. 23.

The Kirk Refinery Co., San Antonio, Tex., has leased property from the Texas-Mexican Railway Co., Laredo, Tex., for a new oil refinery, with lubricating oil plant. Work will commence at once. It will have a daily capacity of 1200 bbl. of oil per day. E. W. Kirkland, San Antonio, is president.

J. C. Ward, Beaumont, Tex., has filed plans for a new one-story ice-manufacturing plant at Magnolia and Harrison streets, to be ready for operation in May.

A vocational department will be installed in the new three-story high school to be erected at Arlington, Tex., plans for which have been completed. Clarkson & Gaines, 606-7 First National Bank Building, Fort Worth, Tex., are architects.

The Sterling Carbon Co., Sterlington, La., is planning to rebuild its machine shop and engine house, recently destroyed by fire.

The Farmers' Co-Operative Ice & Creamery Co., Fairhope, Ala., recently organized, is planning for the erection of a one-story ice-manufacturing plant. Leonard Payne is president.

The G. R. Mueller Co., Brown-Marx Building, Birming-

ham, has inquiries out for a one-story steel mill building, 70 to 80 ft. wide and 400 ft., long, to be provided with a 5 to 10-ton traveling crane.

The McKinney Compress Co., McKinney, Tex., is planning for the erection of an addition to cost about \$40,000. Additional equipment will be installed.

The Edwards Mfg. Co., 529-49 Eggleston Avenue, Cincinnati, manufacturer of sheet metal building products, is perfecting arrangements for a new branch plant at Dallas, Tex., estimated to cost about \$60,000.

The Tyler Motor Co., Tyler, Tex., has completed plans for rebuilding its repair and service works destroyed by fire several months ago with loss of about \$50,000.

The San Antonio Public Service Co., San Antonio, Tex., has plans under way for the installation of a new steam turbine, boilers and other equipment at its plant, to cost about \$500,000. It will form part of the proposed improvement and extension program of the company, estimated at \$1,500,000. E. H. Kifer is vice-president and general manager.

The Brown-Joseph Ice Co., Fort Worth, Tex., and other local interests have acquired property at Nashville Street and the Vickery Boulevard, Polytechnic, Tex., for a new ice-manufacturing plant, estimated to cost about \$75,000, including machinery.

A. D. Alessandro, Waco, Tex., has acquired a metal-working plant of 606 Webster Street, heretofore operated by local interests, and will take immediate possession. It will be arranged for the manufacture of metal display fixtures and additional equipment for plating and other work will be installed.

The Dixie Rubber Co., Memphis, Tenn., is considering plans for a branch plant at Miami, Fla., estimated to cost about \$200,000.

The School Board, Rockdale, Tex., will commence construction immediately of a new high school, to include vocational department, estimated to cost about \$75,000.

The Board of City Commissioners, Boynton, Fla., is planning for the establishment of a municipal electric lighting plant.

J. J. Kane, Galveston, Tex., and associates, have acquired property on the north side of the Government dike for the establishment of a boat building and repair plant, specializing in barges, dredges and similar vessels.

The Board of Trustees, Crescent City, Fla., A. B. Harbison, president, is making inquiries for a new water tank and steel tower, of about 75,000 gal. capacity, and 75 ft. high.

A vocational department will be installed in the new three-story high school, 158 x 225 ft., to be erected at Orlando, Fla., estimated to cost about \$200,000. Bids will be asked in February. F. H. Trimble, Orlando, is architect.

The Mosehart-Schleeter Co., 211 Caroline Street, Houston, Tex., is having plans prepared for rebuilding its automobile repair and service works, recently partially destroyed by fire, with loss estimated at about \$35,000. Alfred C. Finn, Houston, is architect. H. C. Mosehart is head.

Milwaukee

MILWAUKEE, JAN. 23.

Experience the past week has strengthened opinion that the machine-tool trade is on the way to a definite revival. While local tool builders have not been favored with any conspicuous buying, nevertheless orders for one or two machines are coming in and the time is advancing rapidly when production will be resumed on more than a minimum scale. Encouragement has been lent by the reopening of the Gisholt Machine Co.'s plant at Madison, Wis., after a long period of minimum operations, to fill a rush order for special tools for the Western Electric Co., which will keep the plant busy until May 1. Peaks and valleys in the course of production as it follows the trend of orders are gradually being evened up. The development of new designs embracing more manifold purposes and the general efficiency of tools is occupying considerable attention and serves as a good bridge to connect busy and idle periods.

The Filer & Stowell Co., Milwaukee, manufacturer of sawmill and general heavy wood-working machinery, steam engines, etc., and owner of the Beaver Mfg. Co., maker of automobile motors, has started work on a new cupola house, 40 x 55 ft., at the main foundry. It will cost about \$25,000 complete.

The Dane County Board of Supervisors, Madison, Wis., has plans by Allan D. Conover, State architect, for a new power plant and boiler house, 40 x 98 ft., with a 125-ft. stack, conveyors, stokers, etc., to cost about \$30,000, for the county insane asylum and almshouse at Verona. Bids will

is taken Feb. 10. Thomas W. Wilson, 512 West Wilson street, Madison, is chairman.

George Zagel & Brothers, architects, 144 Oneida Street, Milwaukee, have been engaged by S. A. Schneider to design a public garage and service building, 55 x 110 ft., two stories and part basement, to be erected at Twelfth and Harmon streets. Bids will be taken about Feb. 15.

The Perdieu Tool Mfg. Co., Milwaukee, has been incorporated with a capital stock of \$75,000 to manufacture machinery, tools, etc. The incorporators are Rugiley A. Perdieu, 484 Layton Boulevard; J. B. Matthews and Benjamin Poss, attorney, 120 Wisconsin Street. Plans of the corporation have not matured sufficiently to make possible a definite statement.

The Oshkosh Tractor Co., Oshkosh, Wis., organized nine months ago with \$1,500,000 capital stock to take over the business, equipment, etc., of the LaCrosse, Wis., Tractor Co., has indefinitely postponed the construction of its proposed new plant, foundations of which have been completed. Stockholders on Jan. 16 voted to dissolve the corporation and close up its affairs, owing to the inability to properly finance the enterprise. C. C. Shanor is secretary.

The Reliance Motor Truck Co., Appleton, Wis., is preparing to engage in the quantity production of a new design of rotary snow plow to supplement its present line of motor trucks. The device consists of a steel drum, 8 ft. in diameter, containing an auger, the whole mounted on runners attachable to the front axle of a motor truck or equipped to be pushed by a tractor.

The Oconto Public Service Co., Oconto, Wis., is revising plans for improvements costing \$50,000 in its hydroelectric power plant and dam at Peshtigo, Wis. It is intended to begin work about March 15 or April 1. The engineers are Mead & Seastone, Madison, Wis. T. A. Pamperin is president of the company.

The Atkinson-Nash Co., Sparta, Wis., has plans for a two-story garage and service building, 50 x 98 ft., estimated to cost \$25,000.

The Oshkosh Auto Jack Mfg. Co., 176 Marion Street, Oshkosh, Wis., sustained an estimated loss of \$25,000 by fire which badly damaged its two-story factory on Jan. 18. It is planned to lease new quarters and purchase new equipment at once so that production may be resumed as early as possible. William Koeck is president and manager.

Canada

TORONTO, Jan. 23.

The demand for machine tools in this market is beginning to show renewed activity. Sales, however, are not numerous, but prospects for the early future have recently become very bright. Inquiries for equipment are coming forward in increasing numbers and dealers are of the opinion that it will only be a short time before buying will reach the normal stage. Manufacturers have been holding back orders for replacements purposes and have been buying only when absolutely in need of a machine, but the time is not far distant when it will be necessary to increase productive operations and have their equipment in good shape to meet competition not only from other Canadian producers but from American and European manufacturers who are making a strong bid for a hold in this market. A decided improvement has been noted in the small tool market the past week. Drills appear the main feature of demand, but other lines are also coming into more prominence.

The Beaver Machine Shop, 1110 Centre Street, Calgary, Alta., is asking for a lathe and gear cutter.

C. Lovatt, 1537 St. Denis Street, Montreal, is asking for a 25-hp. steam boiler.

The Mount Royal Arena, Montreal, is asking for equipment for an artificial ice plant.

The Union Natural Gas Co., Chatham, Ont., is in the market for piping, tools and drilling equipment for drilling wells, etc.

J. Grey, Maple Street, Collingwood, Ont., is in the market for machinery and equipment for a steel spring and steel specialty factory.

The foundry of McLean, Holt & Co., Fredericton, N. B., was recently damaged \$20,000 by fire. The molding shop suffered the greatest loss.

Dodd & Strothers, manufacturers of copper cable, etc., have arranged for the erection of a manufacturing plant at Windsor, Ont., on which construction will start soon.

The Industrial Supply & Service Co., Ltd., Vancouver,

B. C., is in the market for a double end punch and shear, capacity to $\frac{3}{4}$ -in., with about 24-in. throat; also nut making machine with capacity up to 1-in.

T. J. Moore, Warton, Ont., is the market for a double end matcher for hardwood flooring.

William Hendry and Thomas Ryan, Tacoma, Wash., propose to erect a factory at New Westminster, B. C., to cost \$9,000 for the manufacture of automobile accessories.

The Hydro Electric Power Commission, 43 Hughson Street, Hamilton, Ont., will erect an electric station on Ottawa Street, at a cost of \$100,000. Guy Long is chairman.

California

SAN FRANCISCO, Jan. 14.

August A. Wagniere, Los Angeles, has awarded a contract to the United Construction Co., 516 Baker-Detwiler Building, for a one-story machine shop, 40 x 135 ft.

The Board of Directors, Porterville Union High School District, Porterville, Cal., will build a series of vocational shops in connection with a new high school building, estimated to cost about \$275,000. Coates & Travers, Rowell Building, Fresno, Cal., are architects.

The Kroyer Motors Co., Stockton, Cal., is arranging for the erection of its new automobile plant at Los Angeles, estimated to cost in excess of \$150,000. It is said that work will commence in the spring.

The Board of Education, Long Beach, Cal., is taking bids until Jan. 30, for a new vocational building at the Polytechnic High School, estimated to cost about \$200,000. Bids for equipment will be taken later. John C. Austin, 1125 Baker-Detwiler Building, Los Angeles, and W. Horace Austin, First National Bank Building, Long Beach, are associated architects.

The Santa Fe Railway Co., Los Angeles, has completed plans for a new ice-manufacturing and car icing plant at Riverbank, Cal., 146 x 168 ft., with extension, 85 x 135 ft., estimated to cost in excess of \$75,000. The engineering department of the company is in charge.

The Joseph Musto Sons-Keenan Co., 1801 South Soto Street, Los Angeles, building stone products, has awarded contract to the Baker Iron Works, 950 North Broadway, for a new one-story mill, 114 x 157 ft. Finishing machinery, hoisting and conveying equipment will be required.

Seattle

SEATTLE, JAN. 17.

The new year has opened with a brisk inquiry in the hardware line, which has spread to machine tools without the inclusion of heavy duty machinery. Second hand stocks have become exhausted and will not interfere this season in the legitimate sale of new material. An order was placed the past week by one house for complete equipment of the B. C. Ames line of automobile accessories.

There has been a better movement of drill presses than last year owing to the scanty shipyard stocks which are now non-competitive.

The Oriental export trade is improving, particularly in Japan, which bought a large number of air tools the past 10 days.

The Pacific States Rubber Co., Vancouver, Wash., recently organized is selecting a site for the erection of a plant. The first unit is estimated to cost about \$500,000, and the ultimate works in excess of \$1,000,000. A. M. Elliott, Vancouver, is president.

The Common Council, Bandon, Ore., has preliminary work under way for a municipal hydroelectric power plant to cost about \$80,000. The Miller Engineering Co., Burke Building, Seattle, is in charge.

The Columbia Tire Co., 1401 Northwest Bank Building, Portland, Ore., has acquired a site and plans the immediate erection of its new works. It will comprise four 90 ft. wings, with total frontage of about 350 ft., and is estimated to cost in excess of \$100,000, including machinery. R. A. Wurzburg heads the company.

The Oregon Lumber Co., Hood River, Ore. is considering tentative plans for a hydroelectric power plant for increased power supply at its works.

The Bonsteel Motor Co., Salem, Ore., will break ground in the spring for a two-story service and repair works, 60 x 130 ft.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-ferrous Metals."

Iron and Soft Steel Bars and Shapes

Bars:	Per Lb.
Refined bars, base price	2.53c.
Swedish bars, base price.....	10.00c.
Soft steel bars, base price	2.53c.
Hoops, base price	3.38c.
Bands, base price	3.13c.
Beams and channels, angles and tees	
3 in. x ¼ in. and larger, base.....	2.63c.
Channels, angles and tees under 3 in. x	
¼ in., base	2.53c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	2.50c.
(Smooth finish, 1 to 2½ x ¼ in. and larger) ..	2.70c.
Toe calk, ½ x ¾ in. and larger.....	3.20c.
Cold-rolled strip, soft and quarter hard. .6.25c. to 7.25c.	
Open-hearth spring steel	3.55c. to 6c.
Shafting and Screw Stock:	
Rounds	3.45c.
Squares, flats and hex.	3.95c.
Standard cast steel, base price.....	12.00c.
Extra cast steel	17.00c.
Special cast steel	22.00c.

Tank Plates—Steel

¼ in. and heavier	2.63c.
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Sheets

Blue Annealed

	Per Lb.
No. 10	3.28c. to 3.53c.
No. 12	3.33c. to 3.58c.
No. 14	3.38c. to 3.63c.
No. 16	3.48c. to 3.73c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet, Per Lb.
Nos. 18 to 20.....	3.55c. to 3.80c.	.....
Nos. 22 and 24.....	3.60c. to 3.85c.	4.10c.
No. 26	3.65c. to 3.90c.	4.15c.
No. 28	3.75c. to 4.00c.	4.25c.
No. 30	3.00c. to 4.25c.	.....
No. 28 and lighter, 36 in. wide, 10c. higher.		

Galvanized

	Per Lb.
No. 14	3.85c. to 4.10c.
No. 16	4.00c. to 4.25c.
Nos. 18 and 20.....	4.15c. to 4.40c.
Nos. 22 and 24.....	4.30c. to 4.55c.
No. 26	4.45c. to 4.70c.
No. 27	4.60c. to 4.85c.
No. 28	4.75c. to 5.00c.
No. 30	5.25c. to 5.50c.
No. 28 and lighter, 36 in. wide, 20c. higher.	

Welded Pipe

Standard Steel		Wrought Iron	
Black	Galv.	Black	Galv.
½ in. Butt... —56	—40	¾-in. Butt... —30	—13
¾ in. Butt... —61	—47	1½-in. Butt... —32	—15
1-3 in. Butt... —63	—49	2-in. Lap.... —27	—10
3½-6 in. Lap. —60	—46	2½-6-in. Lap. —30	—15
7-8 in. Lap... —56	—34	7-12-in. Lap.. —23	—7
9-12 in. Lap.. —55	—33		

Steel Wire

	Per Lb.
Bright basic	3.50c. to 3.75c.
Annealed soft	3.50c. to 3.75c.
Galvanized annealed	4.25c. to 4.50c.
Coppered basic	4.00c. to 4.25c.
Tinned soft Bessemer	5.50c. to 5.75c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	17¼c. to 17½c.
High brass wire	17¼c. to 17½c.
Brass rod	14¼c. to 15 c.
Brass tube, brazed	26 c. to 27½c.
Brass tube, seamless	18½c. to 19 c.
Copper tube, seamless	21¼c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 21¼c. per lb. base.
Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

Tin Plates

Bright Tin	Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20	Coke—14-20	Primes	Wasters
			80 lb....	\$6.05	\$5.80
			90 lb....	6.15	5.90
			100 lb....	6.25	6.00
IC..	\$10.00	\$8.50	IC...	6.40	6.15
IX..	11.25	10.00	IX...	7.40	7.15
IXX..	13.00	11.50	IXX...	8.40	8.15
IXXX..	14.75	13.25	IXXX...	9.40	9.15
IXXXX..	16.25	15.00	IXXXX...	10.40	10.15

Terne Plates

8-lb. Coating 14 x 20

100 lb.	\$7.00
IC	7.25
IX	7.50
Fire door stock	10.00

Tin

Straits, pig	35c.
Bar	40c. to 45c.

Copper

Lake ingot	16 c.
Electrolytic	15¼c.
Casting	15¼c.

Spelter and Sheet Zinc

Western spelter	6½c. to 7c.
Sheet zinc, No. 9 base, casks	10½c. open 11c.

Lead and Solder*

American pig lead.....	5¼c. to 6¼c.
Bar lead	6¼c. to 7 c.
Solder, ½ and ½ guaranteed	27c.
No. 1 solder	25c.
Refined solder	21c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.....	80c.
Commercial grade, per lb.....	40c.
Grade D, per lb.....	35c.

Antimony

Asiatic	6c¼. to 6¼c.
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Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb....	26c. to 28c.
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Old Metals

The market is sluggish with a tendency toward weakness. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy crucible.....	11.25
Copper, heavy wire	10.75
Copper, light and bottoms	8.25
Brass, heavy	5.50
Brass, light	4.75
Heavy machine composition.....	8.00
No. 1 yellow brass turnings	5.50
No. 1 red brass or composition turnings	7.25
Lead, heavy	3.75
Lead, tea	2.50
Zinc.	2.50

